

Information about the Tutorial

Red Text = Explanations and information

Black Text = Tells you how to do the different Procedures

Blue Text = Are represented as values, and these are used in Numeric Panels etc.

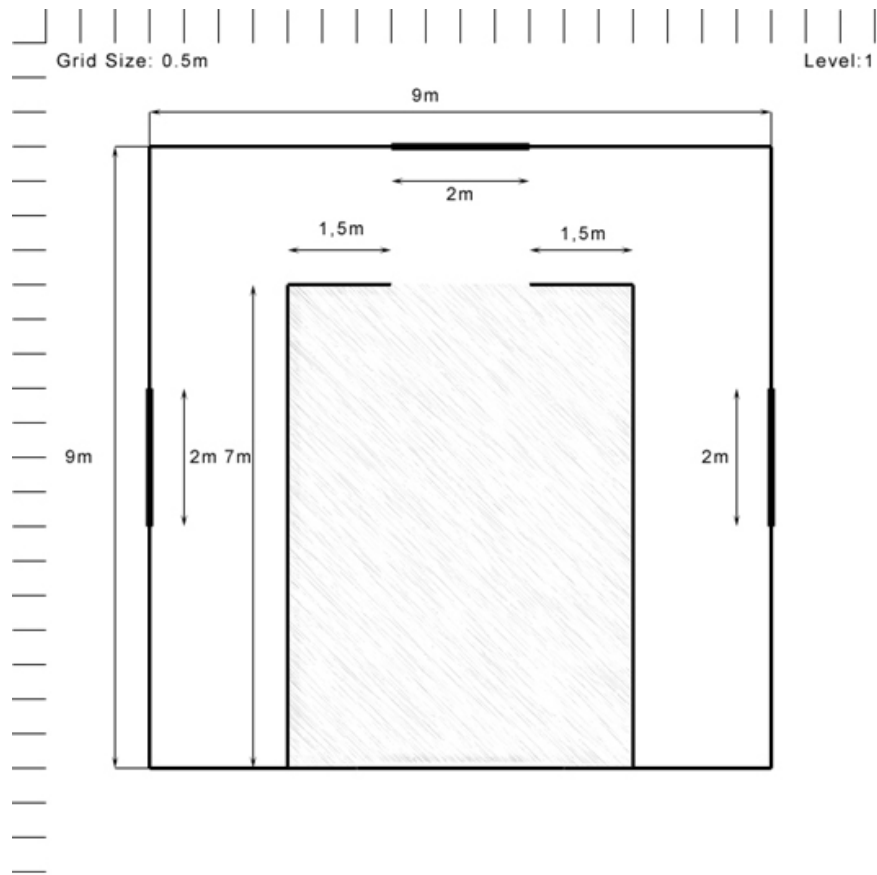
Chapters

- 1. Building the Level 0 Walls**
- 2. Building the Level 1 Walls**
- 3. Creating the Doors**
- 4. Building Floors and Roofs**
- 5. Building the Stairs**
- 6. Creating the Railings**

By Erik Brimstedt

Designing the Room before building it can be a wise choice, and for this I use Photoshop, because all I need to do is draw a few lines, set a few measurements, so I have something to start with. Any 2D paint program should be able to do this, since it's just a simple B&W image. The pictures below are the ones I made, and these are the ones we will use.





Level 1

Chapter 1 - Building the Level 0 Walls

Okay, I take it you took a look at those B&W drawings and got some sort of idea of what we are going to build here. The Hall will have two levels, Level 0 and Level 1, and we will start out with building the Walls to Level 0. Before we start out building, lets make sure you have the same configuration as me.

Start by loading up Modeler, and then bring up the Display Options Panel by hitting "d" on your keyboard. Change to the following settings:

Orientation: Quad: Logo (XY)

Preview Type: OpenGL Smooth Shaded (*If your computer lets you*)

Visibility: All checkboxes should be ticked here except "Patch Polygon"

Unit System: SI

Default Unit: meters

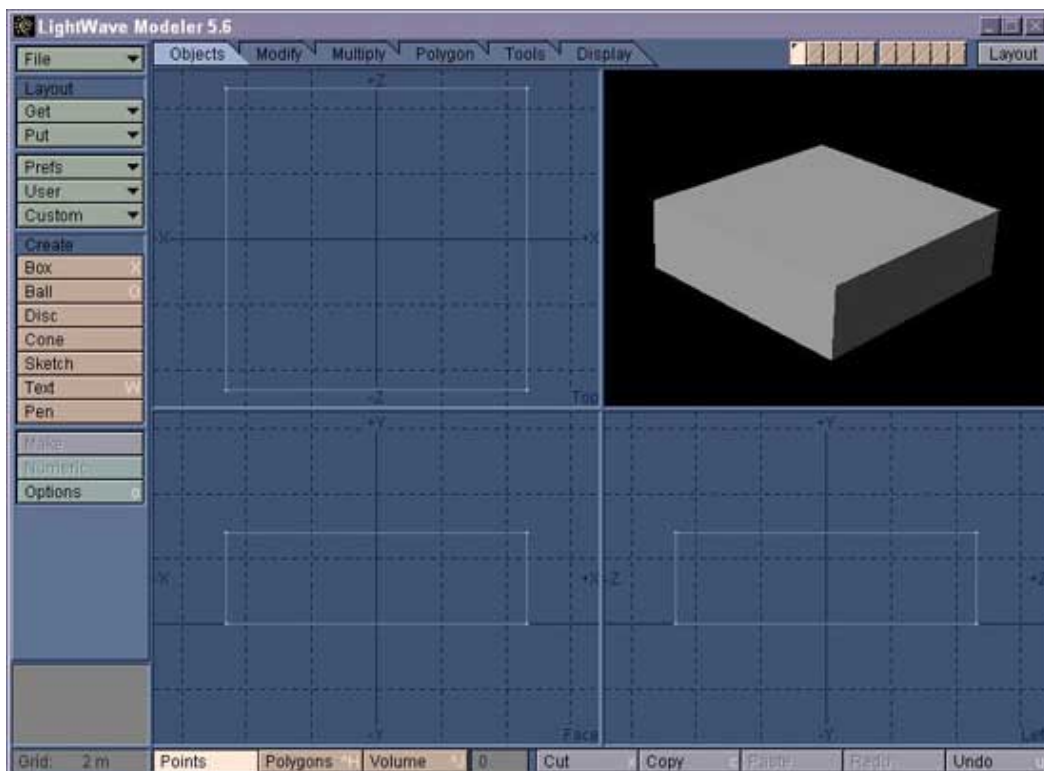
Grid Units: 125

Grid snap: None

When you are done, click OK to get back to modeler. Set the Grid Size to 2m, and activate the Box Tool under "Objects/Create". Bring up the Numeric Panel by hitting "n" on your keyboard, and give the Box the following settings:

	LOW		HIGH		Segments
X	-4,65m	X	4,65m	X	1
Y	0	Y	2,8m	Y	1
Z	-4,65m	Z	4,65m	Z	1

Click OK, and hit "Enter" on your keyboard to create this box. Deselect the Box Tool and hit "a" on your keyboard to fit this box in all views (Picture 1).



Picture 1: The first box created

This will be the Main Wall for Level 0, but we need to deform it a bit.

Bring up the Surface Panel by hitting "q" on your keyboard, and enter "Walls_Wood" as surface name. Give it a brown Colour (R: 170 G: 90 B: 40), enter 75% for specularity and 16 for Glossiness. Click "Apply" and the Surface should affect the Box, giving it a brown colour in the Perspective View. Switch to Layer 2 and activate the Box Tool, bring up the Numeric Panel and enter the following values:

	LOW		HIGH		Segments
X	-4,5m	X	4,5m	X	1
Y	-1m	Y	3m	Y	1
Z	-4,5m	Z	4,5m	Z	1

Click OK and hit "Enter" to create the box. Switch to Layer 3 and activate the Box tool again, bring up the Numeric Panel and enter the following values:

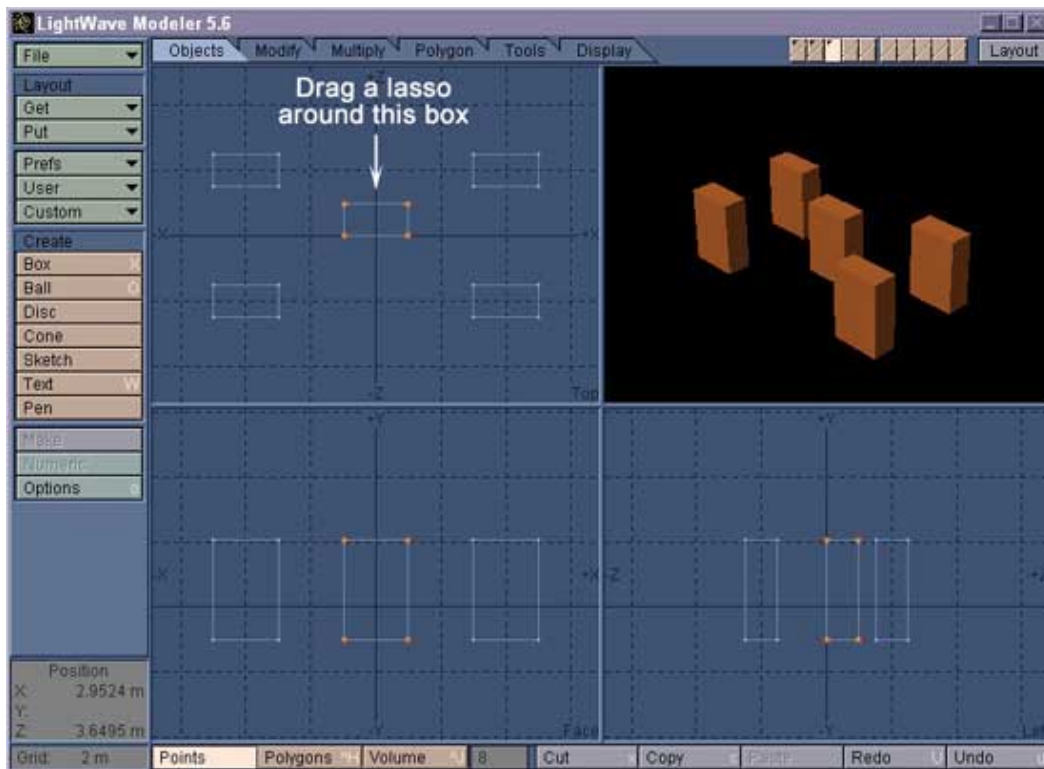
	LOW		HIGH		Segments
X	-1m	X	1m	X	1
Y	-1m	Y	2,05m	Y	1
Z	0	Z	1m	Z	1

Click OK and hit "Enter" to create the box. Activate the Move tool by hitting "t" on your keyboard and bring up the Numeric Panel, enter the following values.

X	4m
Y	0
Z	-2,5m

We will Mirror this box twice, so activate the Mirror tool under the "Multiply" menu. Open up the Numeric Panel and set the Axis to Z and the Position to 0. Click OK and hit "Enter" to perform the Mirror Operation. Keep the Mirror Tool activated and bring up the Numeric Panel again. Change the axis to X and click OK, then hit "Enter" to perform the second Mirror Operation. There should now be 4 boxes in Layer 3, and we are going to create one more, so activate the Box Tool and bring up the Numeric Panel. Just click OK here since the values are already there, and then hit "Enter" to create the box.

We will move this box, so use your mouse in either Front or Top view, and drag a lasso around it to select its points, like in Picture 2.



Picture 2: Select the points of the last created box

When the points have been selected, activate the Move Tool by hitting "t" on your keyboard, and then bring up the Numeric Panel. Use the following settings:

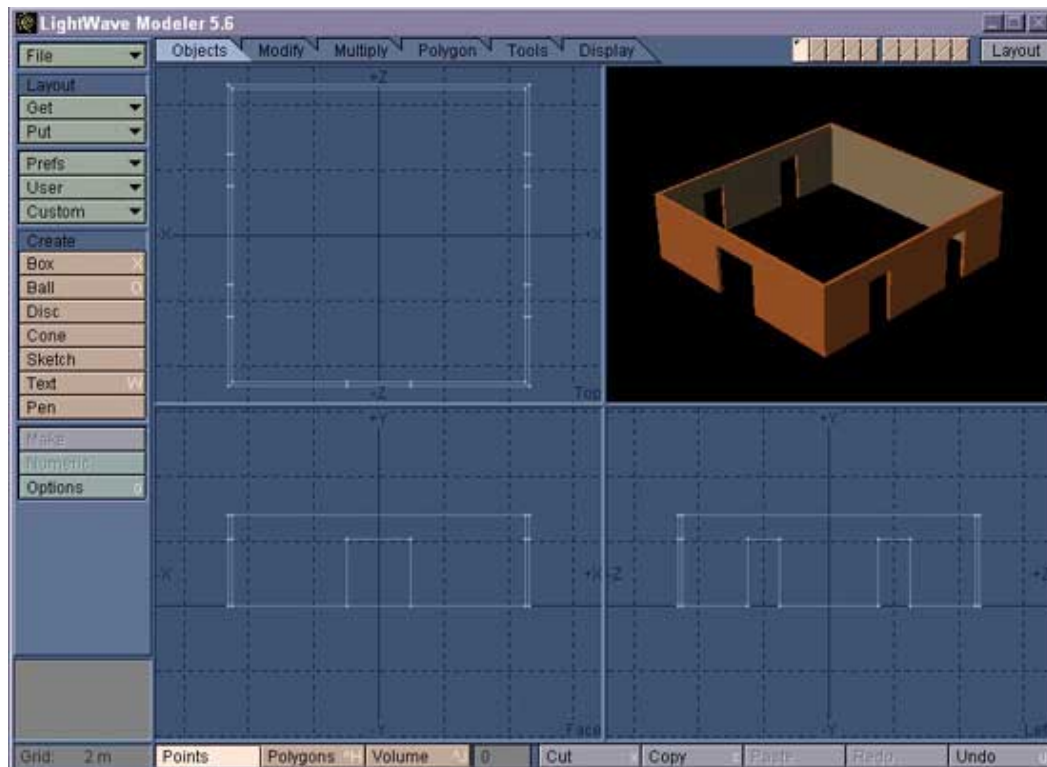
X	0
Y	0
Z	-5m

Deselect everything and bring up the Surface Panel by hitting "q". We will use the "Walls_Wood" surface for these boxes so just select it from the list and click "Apply". Switch to Layer 2, and open up the Surface Panel again. Create a new Surface called "Wallpaper" and give it a light brown-grey colour (R: 180 G: 150 B: 110). Set the Specularity to 0% and click "Apply".

What we have in Layer 2 will make up the Inner Walls. Layer 3 are where the doors will be, now we just need to subtract this out of the Main Wall in Layer 1.

Now we are going to perform two Boolean Subtract Operations, so switch to Layer 1 and put Layer 3 in the background. Activate the Boolean Tool by hitting "shift+b" on your keyboard, select the Subtract Operation and click OK. Hit "m" on your keyboard and merge points with the automatic setting. 30 points should be eliminated.

Switch to Layer 3 and delete the five boxes, we don't need these anymore. Go back to Layer 1 and put Layer 2 in the background, perform another Boolean Subtract Operation, and merge the points when finished. 28 points should be eliminated this time. Switch to Layer 2 and delete the box. The content of Layer 1 should look something like Picture 3.

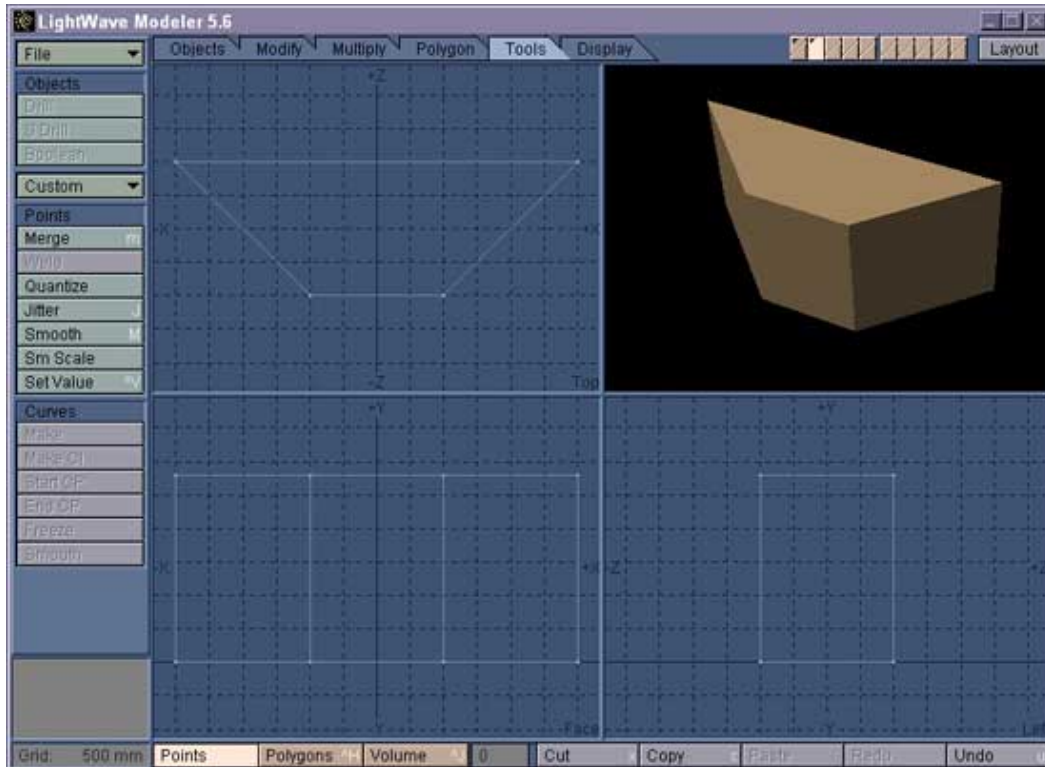


Picture 3: The basic Level 0 Walls

Since we will be adding stairs later on in this tutorial, we might as well prepare some things now to make it a bit easier later on. Switch to Layer 2 and activate the Box Tool, then bring up the Numeric Panel. Enter the following values:

	LOW		HIGH		Segments
X	-3m	X	3m	X	1
Y	0	Y	2,8m	Y	1
Z	2,5m	Z	4,5m	Z	1

Press "a" on your keyboard to fit this new box in all views. Working in Top View, drag a lasso around the left points on the -Z side. 2 Points should be selected. You can see how many points that are currently selected at the bottom of Modeler, next to the "Volume" button. If it says "2" there, then click the "Tools" Tab and select the "Set Value" tool. Set the Axis to X and enter a value of -1m. Do the same thing with the right side points, but set the Value to 1m on X-axis this time, the deformed box should look like Picture 4.



Picture 4: The deformed box

For now, we will give this box the Wallpaper surface, so bring up the Surface Panel and apply the Wallpaper. Switch to Layer 1 and put Layer 2 in the background, activate the Boolean Tool and perform a Union Operation. Merge the Points with the automatic setting. 4 Points should be eliminated. Switch to Layer 2 and delete the box, then switch back to Layer 1. Now we will add some detail to the walls, but first we must select the polygons we want to add detail to. Switch to Polygon Mode by hitting "ctrl+H" on your keyboard, or by clicking the "Polygon" button at the bottom of Modeler. Hit "w" to bring up the Polygon Statistics Panel, and at the bottom of this Panel, you should see a slide-down menu. Click that menu and select the Wallpaper surface, then click the + next to "with surface". Only the polygons with the Wallpaper surface applied to them will now be selected, and the total amount of Wallpaper polygons should be 11.

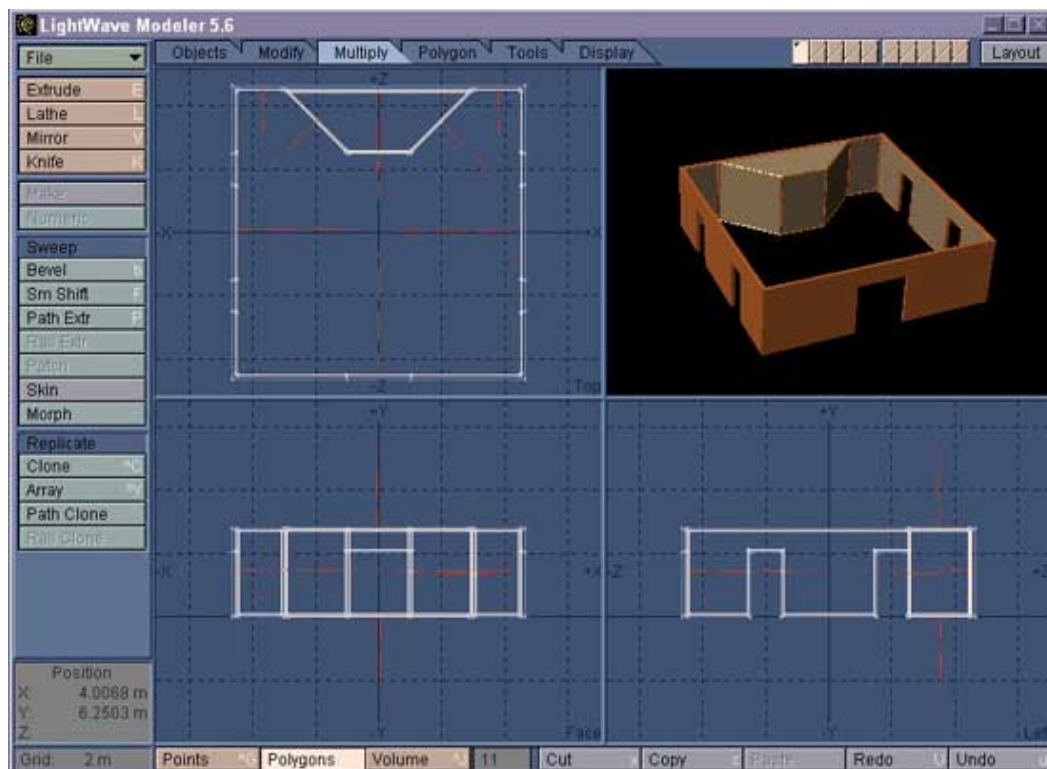
We will use the Bevel Tool on these polygons to add doorframes, and some frames that will follow the floor and ceiling.

First thing we will do is change the surface on the selected polygons, so bring up the Surface Panel and change the surface to Walls_Wood. Everything in the Perspective window should now have a brown colour.

Bring up the Bevel Panel by hitting “b” on your keyboard. We will perform 10 Bevels here, to get a good-looking frame, do them one by one with the following settings:

	Inset	Shift
1	20 mm	-20 mm
2	10 mm	10 mm
3	10 mm	-10 mm
4	2 mm	5 mm
5	4 mm	5 mm
6	6 mm	5 mm
7	8 mm	3 mm
8	10 mm	0 mm
9	5 mm	-5 mm
10	0 mm	-10 mm

When you are done with these 10 bevels, keep the Polygons selected and change the surface to Wallpaper again, you should now have something like in Picture 5.



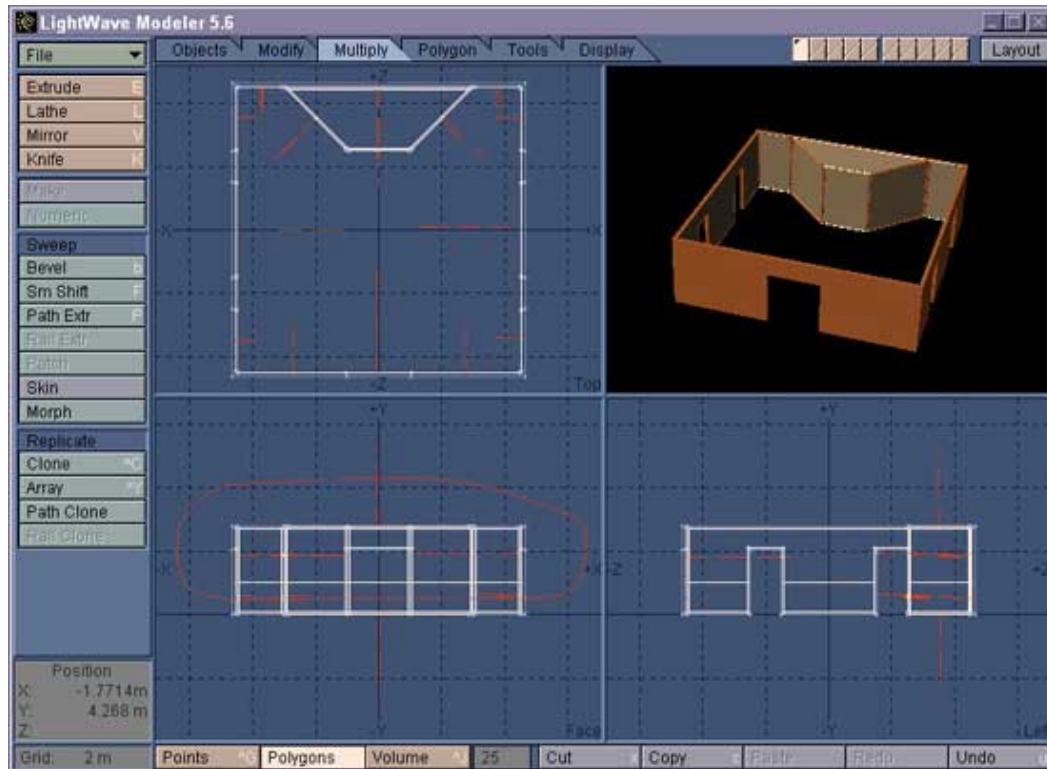
Picture 5: The first Bevel Operations finished

We will now make some Wood Panels on the lower parts of the walls, so keep these Wallpaper polygons selected, and activate the Knife Tool by hitting “shift+K” on your keyboard. Bring up the Numeric Panel and enter the following values:

Axis: Z

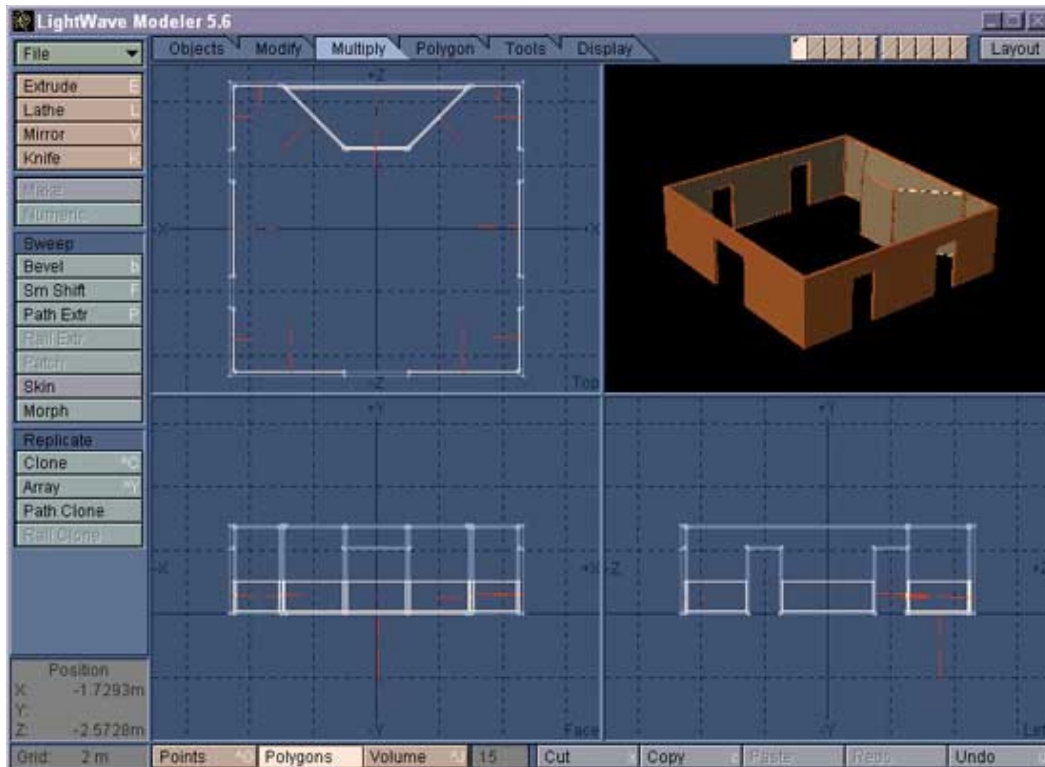
	Start		End
X	-5m	X	5m
Y	1m	Y	1m
Z	0	Z	0

Click OK and then hit Enter to perform the Knife Operation. If you look in Front or Side View now you should see that the Wallpaper Polygons have been split 1m up on the Y-axis, and before we proceed, we need to deselect the upper part. Working in Front View, and with all the polygons still selected, drag a lasso like in Picture 6.



Picture6: Drag a lasso with your mouse in Front View

The only Polygons selected now should be the ones below the cut we made earlier with the Knife Tool, have a look at Picture 7 to see if you got it right.



Picture 7: These Polygons should be the only ones selected

Bring up the Surface Panel with these Polygons selected and apply the Walls_Wood surface. Perform 13 bevels on these selected Polygons with the following settings:

	Inset	Shift
1	5 mm	20 mm
2	20 mm	0 mm
3	10 mm	-10 mm
4	50 mm	0 mm
5	10 mm	10 mm
6	50 mm	0 mm
7	10 mm	-10 mm
8	10 mm	10 mm
9	10 mm	-10 mm
10	150 mm	0 mm
11	10 mm	10 mm
12	20 mm	0 mm
13	10 mm	-10 mm

That's it for Level 0 Walls at this point. Save this object as "Level0_Walls.lwo", so we can get on with building the Level 1 Walls.

Chapter 2 - Building the Level 1 Walls

Okay, keep the Level 0 Walls in Layer 1 and switch to Layer 2, then activate the Box Tool. Bring up the Numeric Panel and enter the following values.

	LOW		HIGH		Segments
X	-4,65m	X	4,65m	X	1
Y	2,95m	Y	5,75m	Y	1
Z	-4,65m	Z	4,65m	Z	1

Click OK and hit Enter to create the box, and give this box the Walls_Wood surface. Switch to Layer 3, and bring up the Numeric Panel for the Box Tool again, enter the following values.

	LOW		HIGH		Segments
X	-4,5m	X	4,5m	X	1
Y	2m	Y	6m	Y	1
Z	-4,5m	Z	4,5m	Z	1

Click OK and then Enter to create the box. Give this Box the Wallpaper surface. Switch to Layer 4 and bring up the Numeric Panel for the Box Tool once more, enter the following values.

	LOW		HIGH		Segments
X	-1m	X	1m	X	1
Y	2m	Y	5m	Y	1
Z	-1m	Z	1m	Z	1

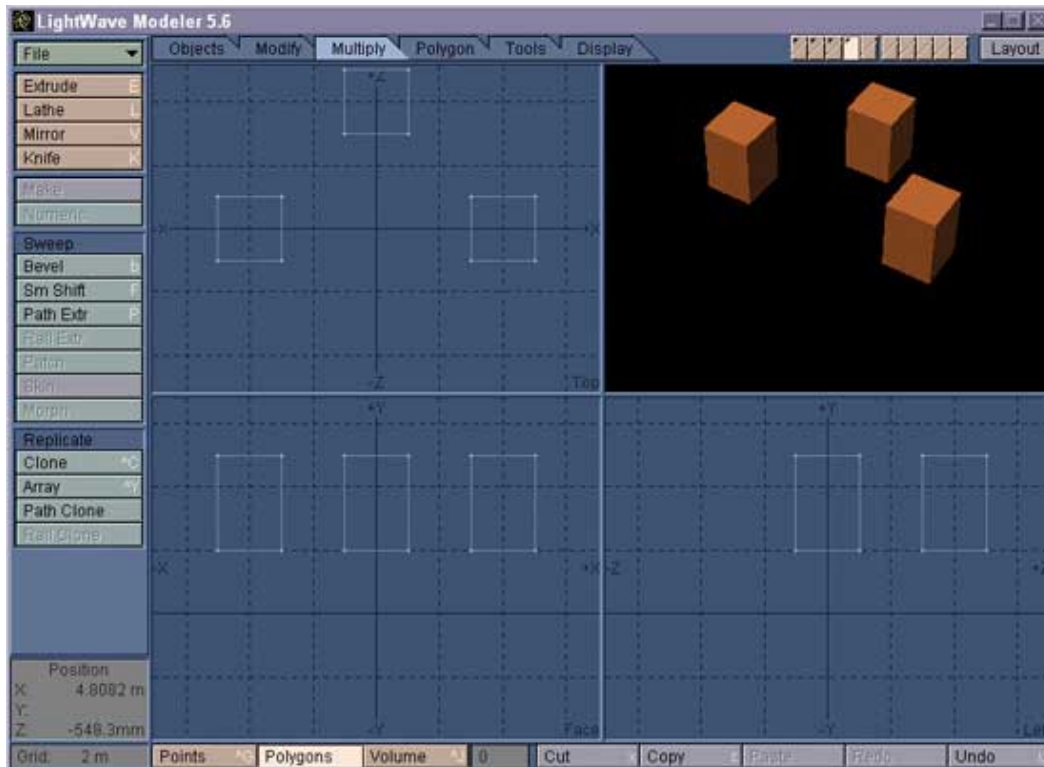
Click OK and then Enter to create the Box. Activate the Move Tool and bring up the Numeric Panel, enter the following settings.

X	4m
Y	0
Z	0

Activate the Mirror Tool and bring up the Numeric Panel. Set the Axis to X and the Position to 0, click OK and hit Enter to perform the Mirror Operation. Activate the Box Tool again, bring up the Numeric Panel and click OK, the values we used last time should still be there. Drag a lasso around this new Box to select all it's Polygons, then activate the Move Tool, bring up the Numeric Panel and enter the following values.

X	0
Y	0
Z	4m

When all the three boxes are in position, apply the Walls_Wood surface to them all. Layer 4 should look something like in Picture 8.



Picture 8: These three will be the doors of Level 1

Now we will perform 2 Boolean Subtracts again, so switch to Layer 2 and put Layer 4 in the background, then activate the Boolean Tool and select the Subtract Operation, merge points when finished. 18 Points should be eliminated this time. Keep Layer 2 as the active one and put Layer 3 in the background, then perform one more Boolean Subtract, and merge points when finished. 20 points should be eliminated this time. You may now delete the boxes in Layer 3 and Layer 4, we don't need them anymore. Switch to Layer 2 when done.

We will now repeat a few steps that we made with the Level 0 Walls. Bring up the Polygons Statistics Panel by hitting "w" and select the Polygons that have got the Wallpaper surface applied to them, there should be 4 Polygons selected. Give these Polygons the Walls_Wood surface for now, then activate the Bevel Tool and perform 10 Bevels with the following settings.

	Inset	Shift
1	20 mm	-20 mm
2	10 mm	10 mm
3	10 mm	-10 mm
4	2 mm	5 mm
5	4 mm	5 mm
6	6 mm	5 mm
7	8 mm	3 mm
8	10 mm	0 mm
9	5 mm	-5 mm
10	0 mm	-10 mm

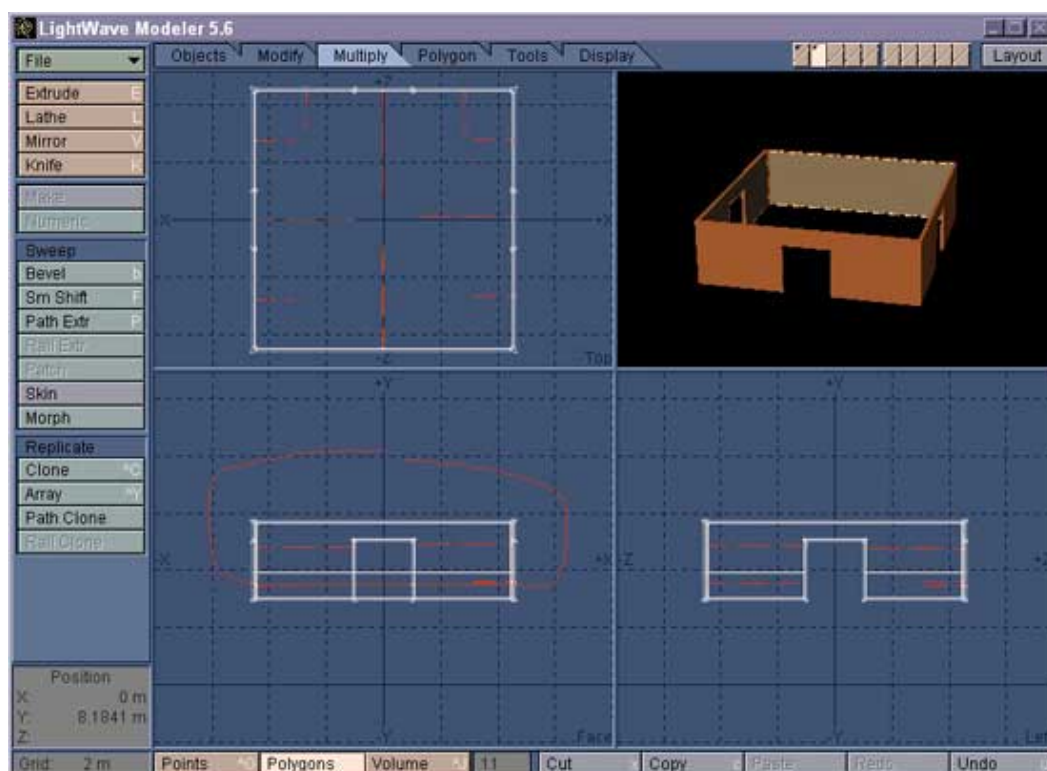
As you can see we repeated a few steps here. The walls on Level 1 should have the same detail as the Level 0 ones, so the bevel operations etc are the same.

Keep the Polygons selected and change the Surface to Wallpaper now. We should make some Wood Panels for the Level 1 Walls to, but not all the way around. First of all, we need to cut the selected Wallpaper Polygons along the Z-axis, so bring up the Numeric Panel for the Knife Tool and enter the following settings.

Axis: Z

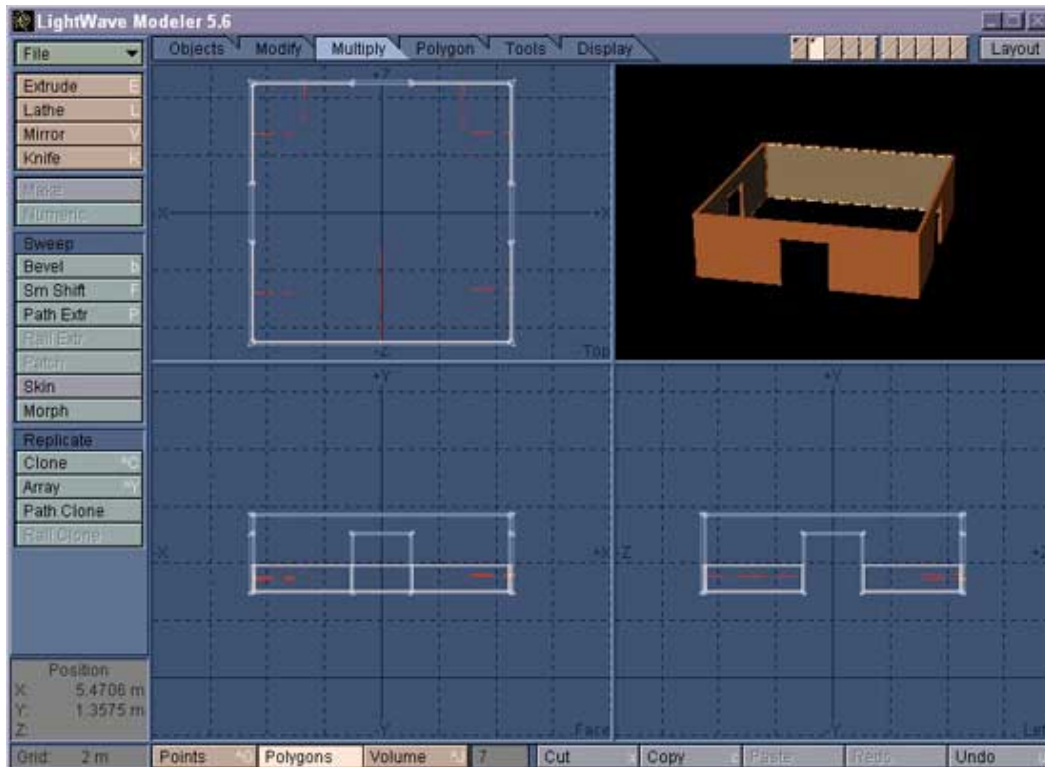
	Start		End
X	-5m	X	5m
Y	3,95m	Y	3,95m
Z	0	Z	0

Now when the Polygons are cut, we need to deselect the ones above the cut we just made, so drag a lasso around these like in Picture 9.



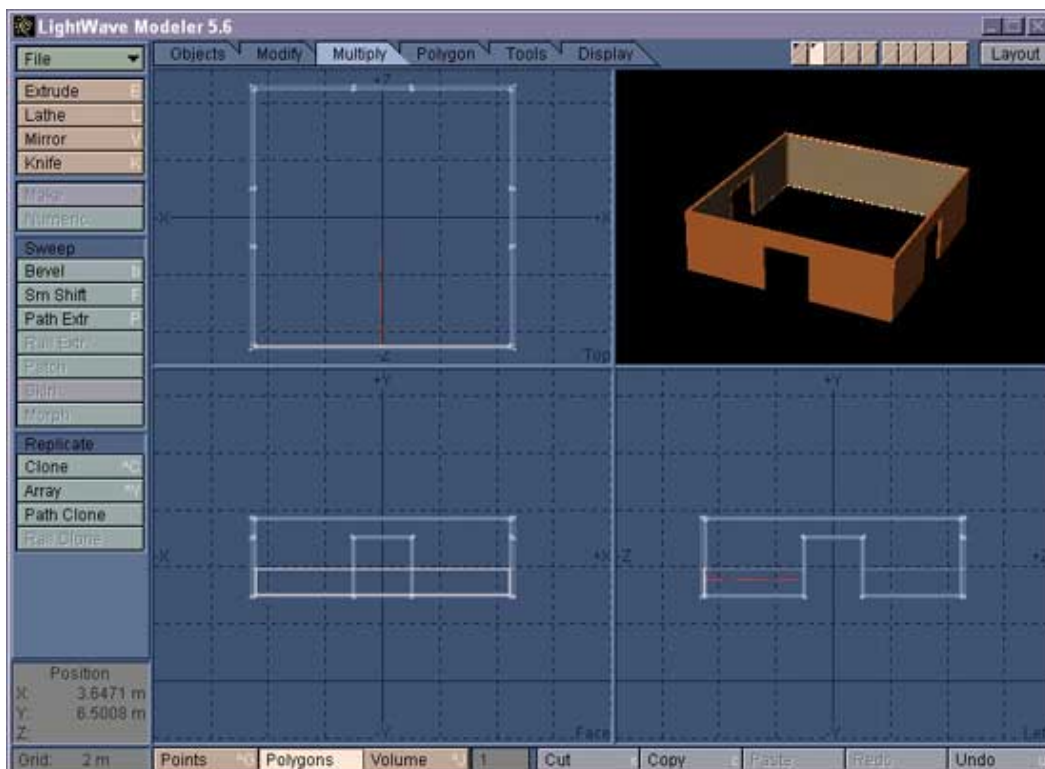
Picture 9: Drag a lasso around the Top Polygons

If you got this right, the only selected Polygons should be the ones below the Knife cut, like in Picture 10.



Picture 10: The only Polygons that should be selected

Working in Top View now, deselect the Wallpaper Polygons that has got a door cut, leaving only one Polygon selected, like in Picture 11.



Picture 11: The only Polygon that should be selected

This is the Polygon we will Cut two times using the Knife Tool, so bring up the Numeric Panel and enter the following settings.

Axis: Z

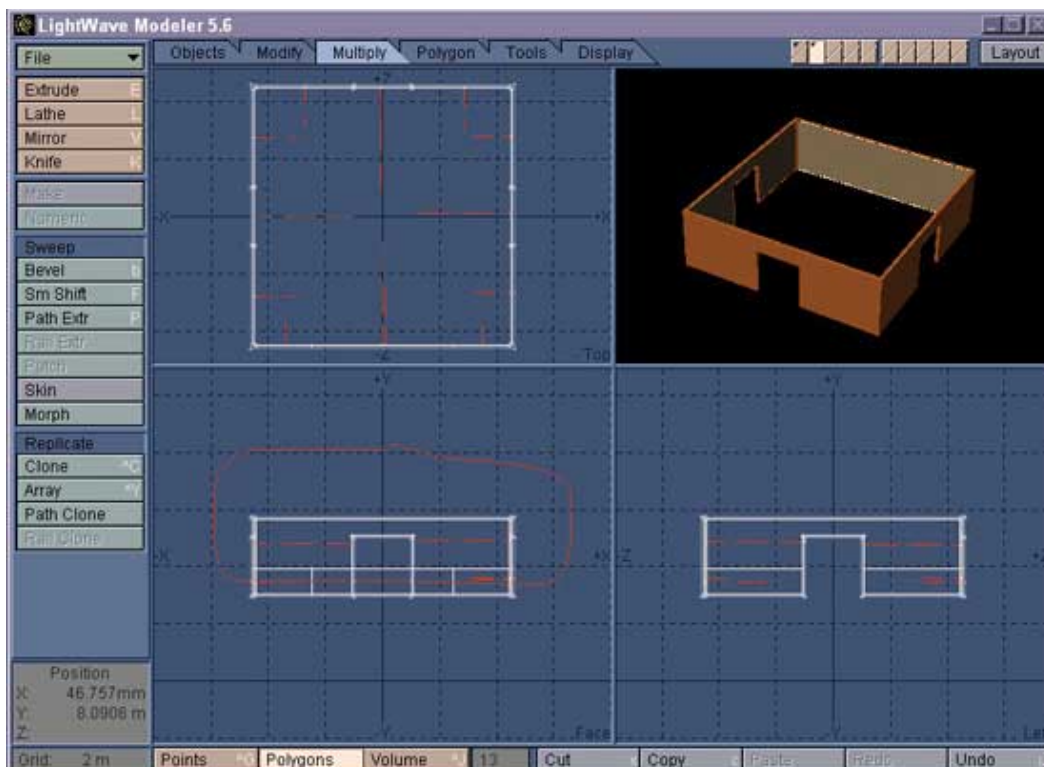
	Start		End
X	-2,5m	X	-2,5m
Y	2m	Y	5m
Z	0	Z	0

Click OK and then hit Enter to perform the Knife Operation. Keep the Knife Tool activated and bring up the Numeric Panel again, enter the following values.

Axis: Z

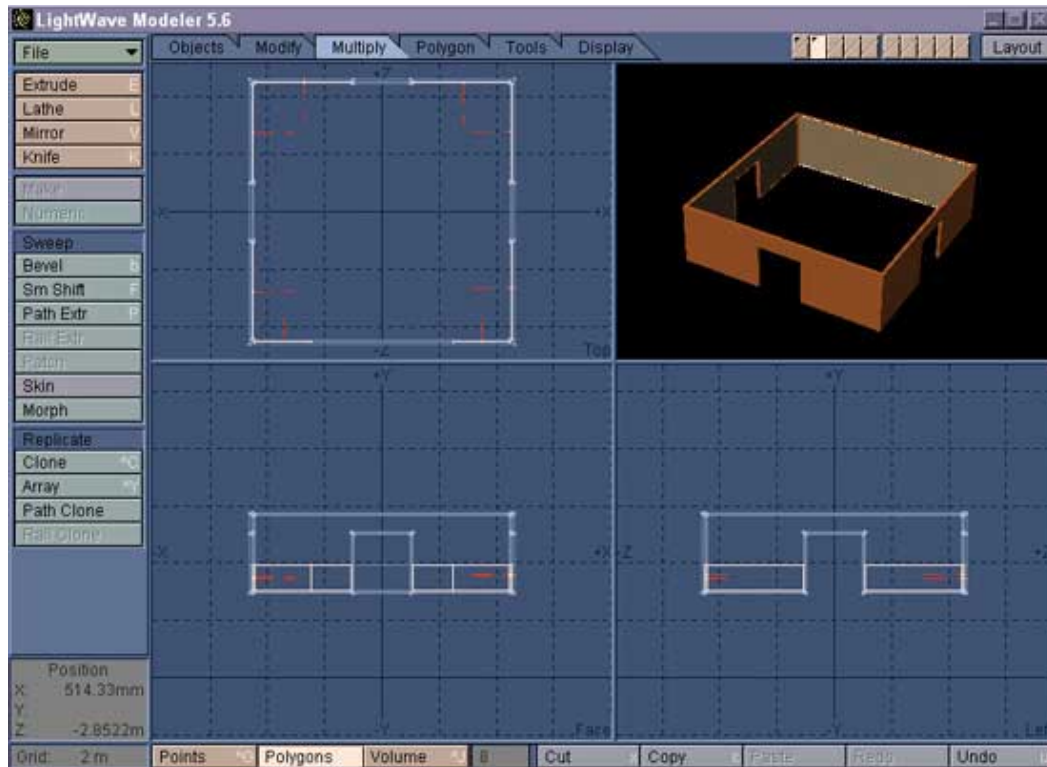
	Start		End
X	2,5m	X	2,5m
Y	2m	Y	5m
Z	0	Z	0

Bring up the Polygon Statistics Panel now and select all the Polygons with the Wallpaper surface. We need to deselect some of these before we proceed. Working in Front View, drag a lasso around the Top Polygons like in Picture 12.



Picture 12: Once again drag a lasso around the Top Polygons

The only Polygons selected now should be the ones below the Knife cut we made earlier, but we need to deselect one more Polygon, and we must use the mouse to do it. The wall that has got no door cut has got 3 Polygons, click on the middle one to deselect it, then take a good look at Picture 13 to see if you got the right Polygons selected. The amount of Polygons selected now should be 8.

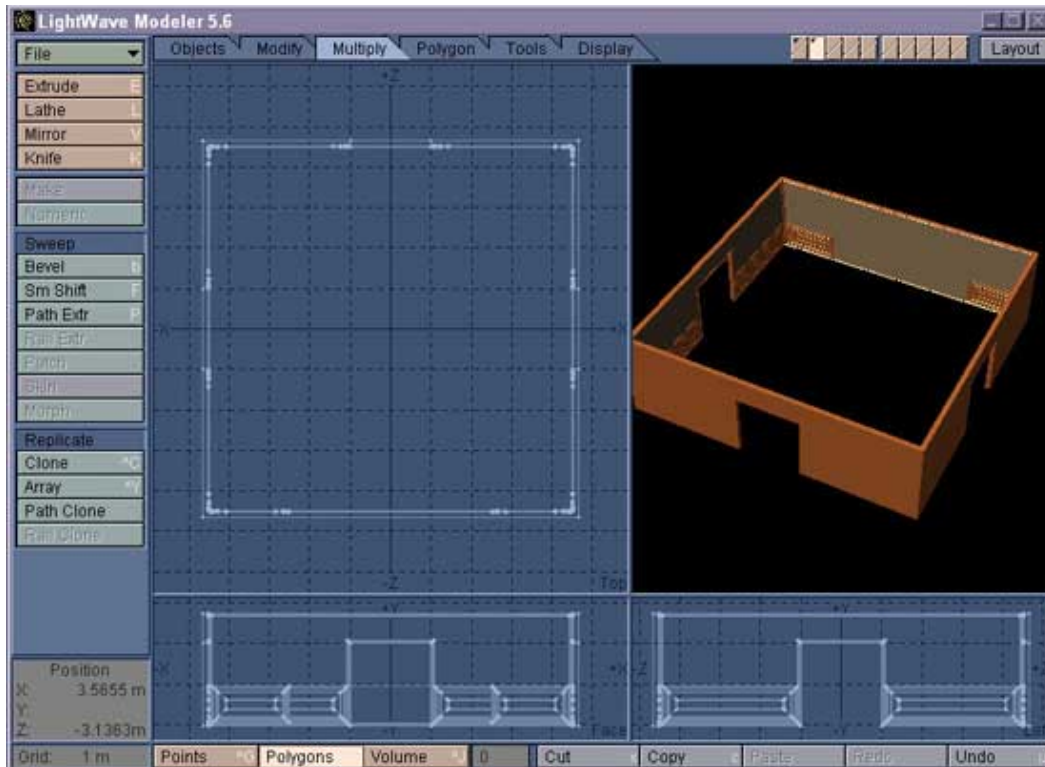


Picture 13: 8 Polygons selected and ready for the Bevel Tool

Before we proceed with the Bevel Tool, we need to change the Surface of these Polygons the Walls_Wood. Then activate the Bevel Tool by hitting "b" and perform 13 bevels, one by one.

	Inset	Shift
1	5 mm	20 mm
2	20 mm	0 mm
3	10 mm	-10 mm
4	50 mm	0 mm
5	10 mm	10 mm
6	50 mm	0 mm
7	10 mm	-10 mm
8	10 mm	10 mm
9	10 mm	-10 mm
10	150 mm	0 mm
11	10 mm	10 mm
12	20 mm	0 mm
13	10 mm	-10 mm

Deselect everything, and save this Object as "Level1_Walls.lwo". If you did all the steps for Level 1 Walls right, your object should look like the one in Picture 14.



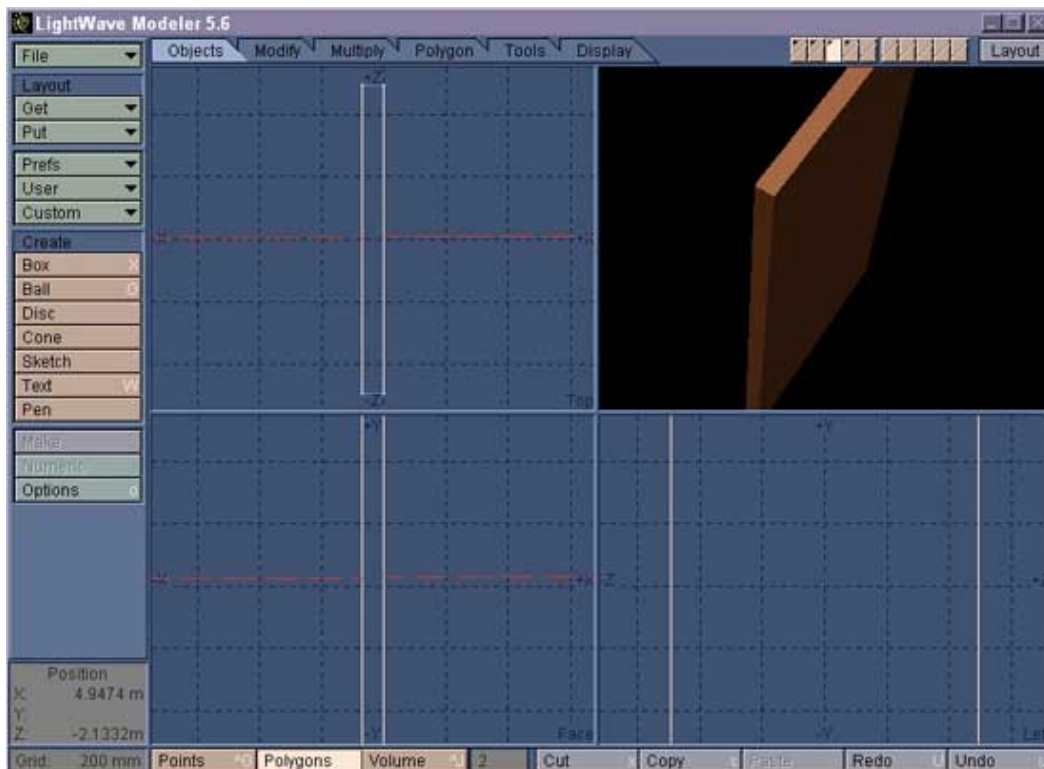
Picture 14: The finished Level 1 Walls.
Note that the Wood Panels don't go all the way
On the wall that has no Door Cut.

Chapter 3 - Creating the Doors

Okay, lets put the doors in place before we start out with the floors and the stairs. Keep the Level 0 Walls in Layer 1 and the Level 1 Walls in Layer 2, then switch to Layer 3. Bring up the Numeric Panel for the Box Tool and enter the following values.

	LOW		HIGH		Segments
X	4,53 m	X	4,6 m	X	1
Y	0	Y	2,04m	Y	1
Z	-2,495m	Z	-1,505m	Z	1

Click OK and then Enter to create this Box. Bring up the Surface Panel and create a new surface called Doors, and give it a brown colour (R: 120 G: 65 B: 30). Set the specularity to 75%, and the Glossiness to 16. Activate Smoothing and set the Max Smoothing Angle to 35 degrees. Move your mouse pointer to the Top View and hit "ctrl+A" on you keyboard, this will fit the door in Top View only. We are going to perform a few Bevels on this Box, so select the two Polygons that make up the front and back of this door, like in Picture 15.



Picture 15: Select these two Polygons

Bevel these Polygons with the following settings.

	Inset	Shift
1	10 mm	10 mm
2	50 mm	0 mm

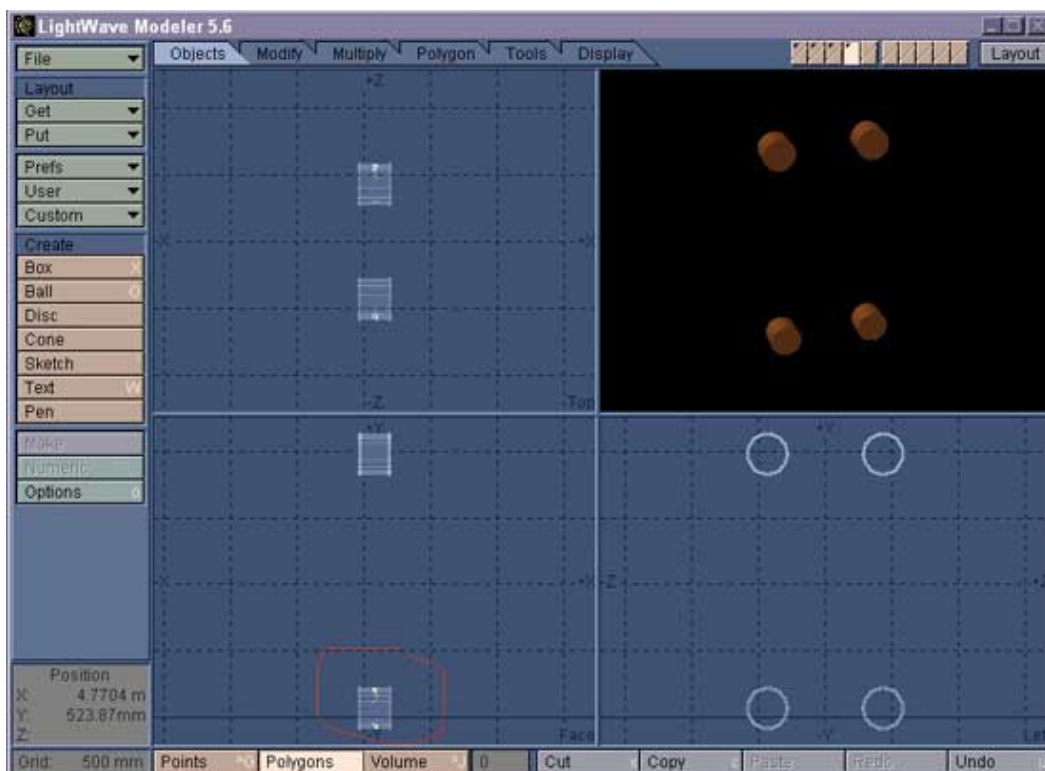
First part of the door is finished, and the next step will be to add some detail to the corners of this door. We will create a Cylinder, which we will use as a Slice object.

Keep these Polygons selected and give them the Walls_Wood surface for now. Switch to Layer 4 and activate the Disc Tool, then bring up the Numeric Panel and enter the following settings.

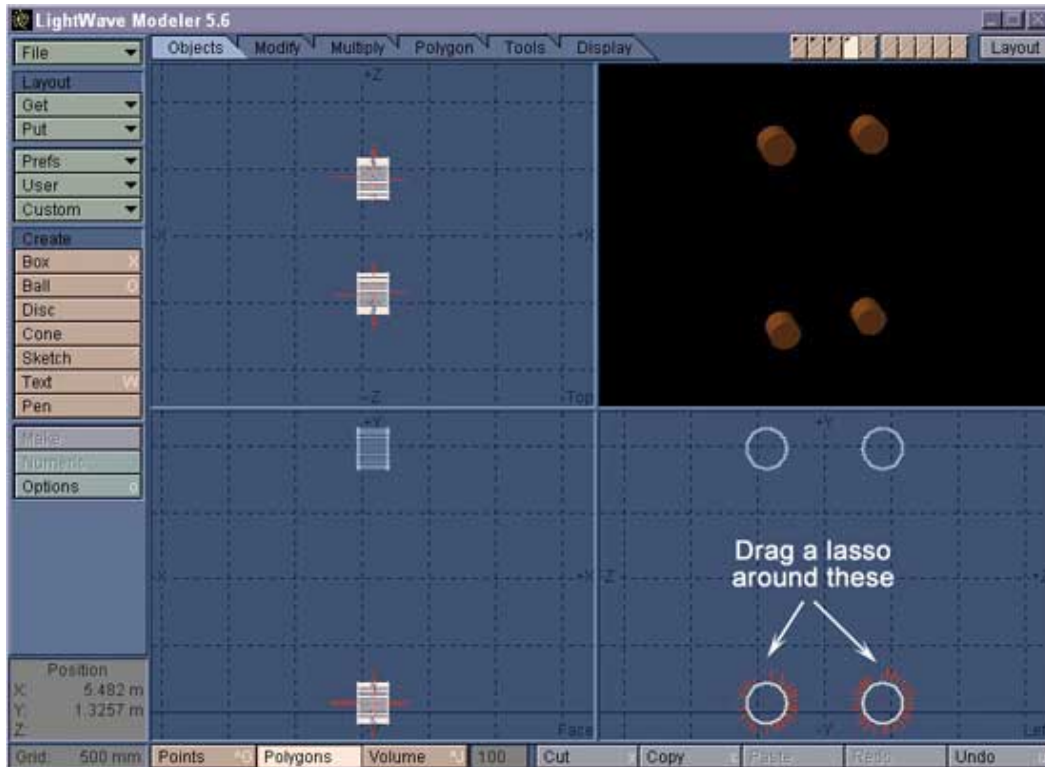
Sides: 48
Segments: 1
Bottom: 4,47m
Top: 4,69

	Center		Radii
X	4,58m	X	0m
Y	1,98m	Y	150mm
Z	-2,435m	Z	150mm

Click OK and then Enter to create this Cylinder/Disc. Activate the Mirror Tool, bring up the Numeric Panel, and set the axis to Z and the position to -2m. Click OK and then Enter to perform the Mirror Operation, you should now have two Cylinders in the Top Corners of this door, and we need a few more. Keep the Mirror Tool activated and bring up the Numeric Panel again, set the axis to Y this time and enter 1,025m for Position. Click OK and then Enter to perform the Mirror Operation. Press "a" on your keyboard to fit these four Cylinders in all views. Working in Front View, drag a lasso around the two lowest Cylinders, like in Picture 16 and Picture 17.



Picture 16: Drag a lasso around the two lowest Cylinders in Front View



Picture 17: These two Cylinders should be selected

Hit "c" on your keyboard to Copy these Cylinders and then hit "v" in the same Layer to paste them again. Activate the Move Tool and bring up the Numeric Panel, enter a value of 940mm on the Y-axis, leave the others to 0 and click OK. You should now have 6 Cylinders in Layer 4. Switch back to Layer 3 where the door is and bring up the Polygons Statistics Panel by hitting "w". Select the Walls_Wood surface from the Slide-Down menu and click the + next to "With Surface" to activate these two Polygons. Close down the statistics and activate the Knife Tool, then bring up it's Numeric Panel and enter the following values.

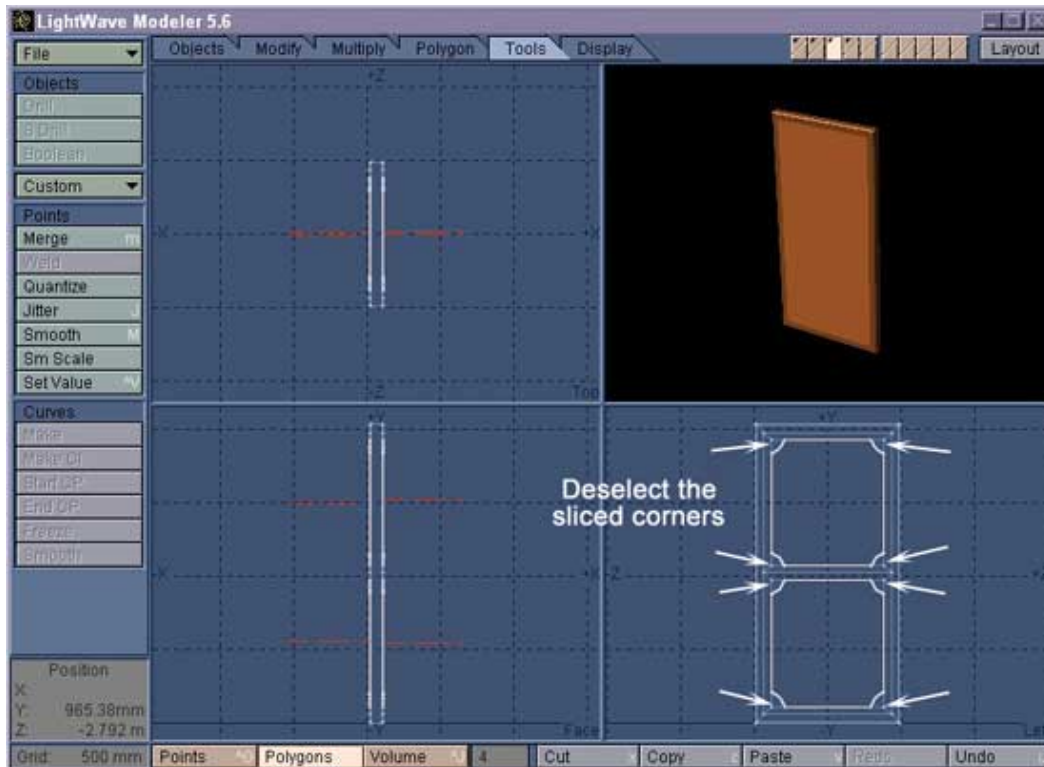
Axis: X

	Start		End
X	0	X	0
Y	1,025m	Y	1,025m
Z	-2,5m	Z	1,3m

Click OK and then hit Enter to perform the Knife Operation. The Polygons should be split in half, and you should now have a total amount of 4 Polygons. Keep these selected and bring up the Bevel Panel, enter the following settings.

	Inset	Shift
1	50 mm	0

Keep the Polygons selected and put Layer 4 in the background, then activate the "S Drill" Tool under the Tools tab. Select the Slice Operation and click OK. The selected Polygons should now be cut in each corner. We need to remove these small pieces that were cut. Working in Side View, use your mouse and click on each of these small pieces to deselect them, like in Picture 18.



Picture 18: Deselect the edges of the cut Polygons

We will perform one last bevel on this Door, so activate the Bevel Tool and enter the following settings.

	Inset	Shift
1	10 mm	-10 mm

Deselect everything and bring up the Surface Panel, give all the Polygons the Door Surface; you may also delete the Cylinders in Layer 4 now.

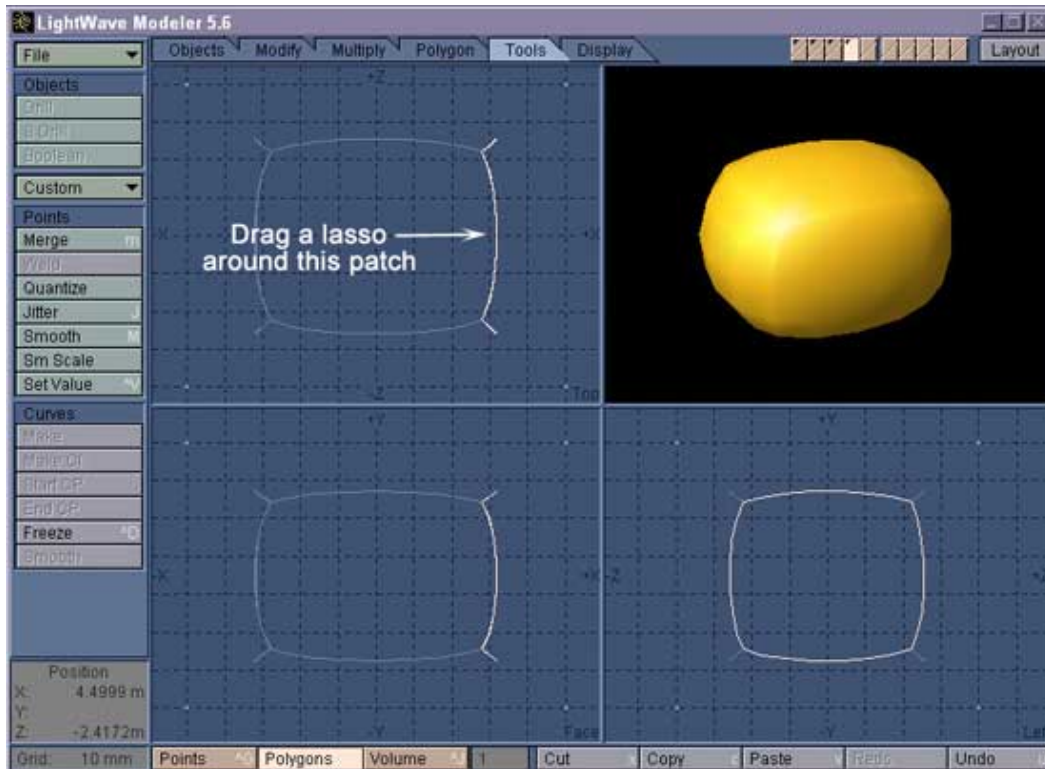
Before we clone this door, we need to create a doorknob for it, and we will create a fairly simple one, you could of course improve it later on.

Switch to Layer 4 and activate the Box Tool, then bring up the Numeric Panel and enter the following values.

	LOW		HIGH		Segments
X	4,44 m	X	4,54m	X	1
Y	980mm	Y	1,05m	Y	1
Z	-2,43m	Z	-2,35m	Z	1

Click OK and then Enter to create the box. Hit "a" on your keyboard to fit the box in all views, then press the "Tab" key on your keyboard to activate MetaNURBS. Before we deform this box, let's give it a surface. Bring up the Surface Panel and enter Door_knob as Surface name, then give it a gold colour (R: 250 G: 190 B: 25). Set the Specularity to 100%, Glossiness to 16 and activate Smoothing, set the angle to 89,5.

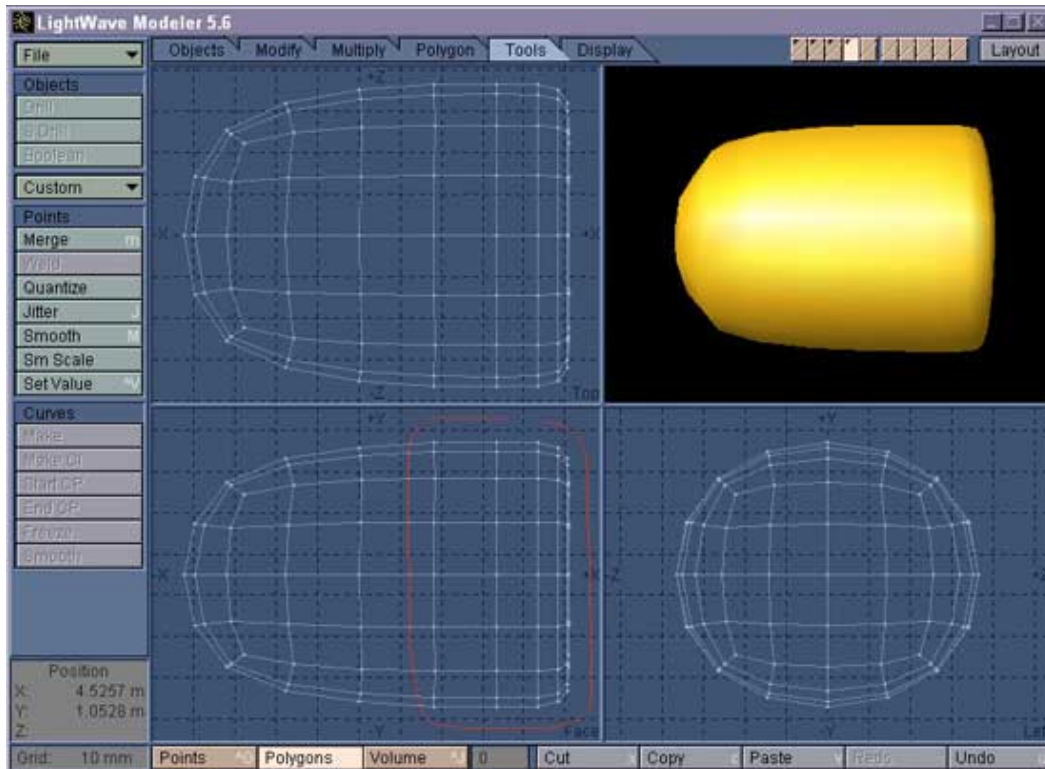
Hit the "o" key to bring up the Options Panel and set the Patch Division to 4. Working in Top View, select the right patch of this MetaNURB'ed box, like in Picture 19.



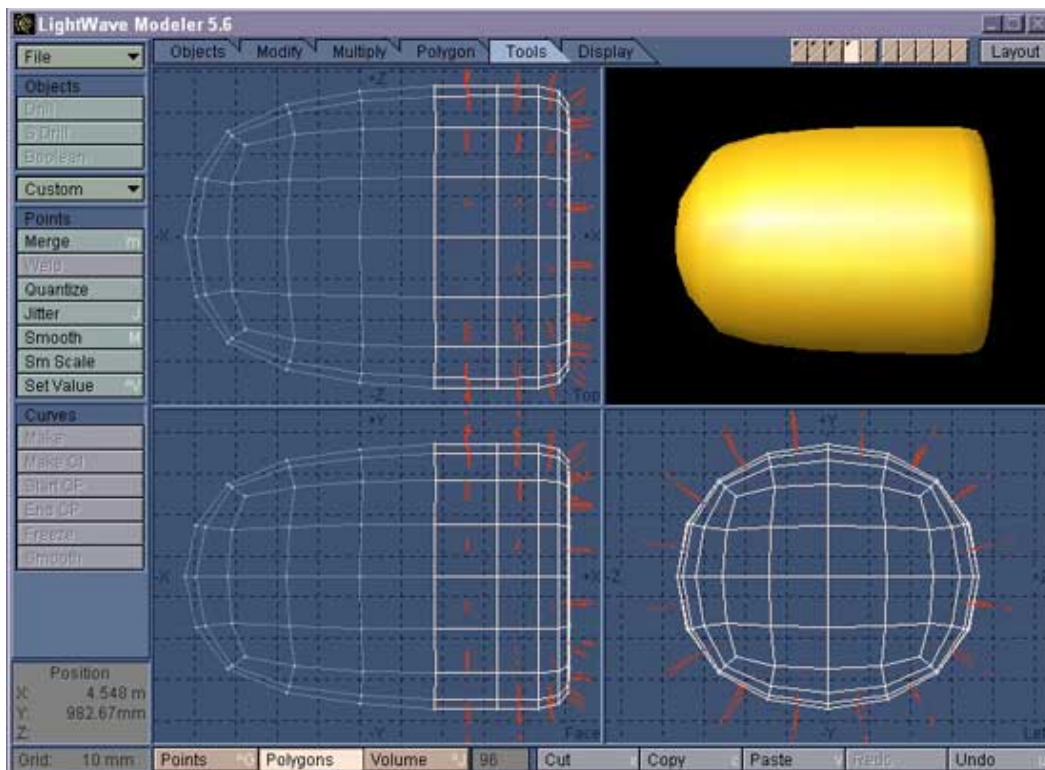
Picture 19: Use the lasso and select the right Polygon

Hit "shift+F" on your keyboard to bring up the Smooth Shift Panel. Enter an Offset value of 1mm and leave the Smoothing angle to 89,5. Click OK and deselect the Patch, then freeze these NURBS by hitting "ctrl+d" on the keyboard. Enter the Options Panel again and change the Patch Division to 2, and click OK.

Working in Front View, drag a lasso around the right half of this Doorknob, like in Picture 20, and then check with Picture 21 to see that you've selected the right Polygons.

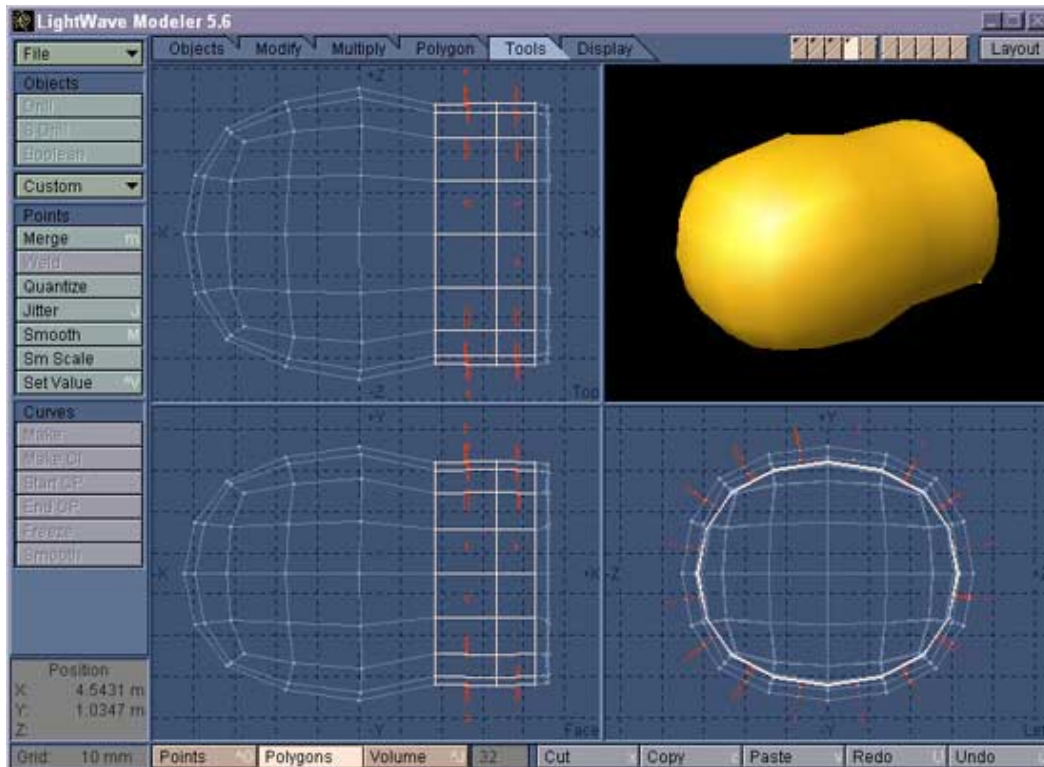


Picture 20: Drag a lasso around the Right Half of the Doorknob



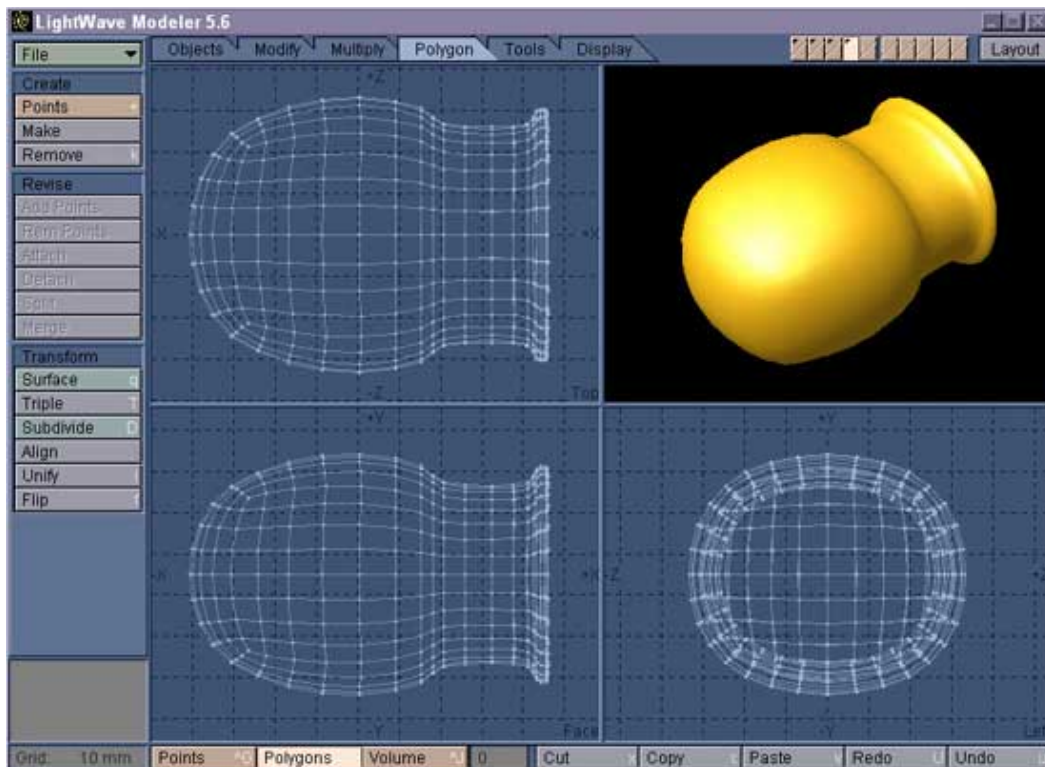
Picture 21: These Polygons should be selected

You should now have 96 Polygons selected, and under the Tools Tab you should be able to find a Smooth Scale Tool. Activate this Tool and set the Offset to -5mm, then click OK. Now we need to deselect some of the selected Polygons, so working in Front View, drag a lasso around the most right Segment of Polygons, to deselect these, check Picture 22 to see if you got it right.



Picture 22: Deselect the most right Segment of Polygons in Front View

If you did this deselecting right, you should now have an amount of 32 Polygons selected. Activate the Smooth Shift Tool by hitting "shift+F" and set the Offset to -5mm, leave the Smoothing Angle to 89,5. Click OK and the Polygons should shrink even more. Now deselect everything and hit "Tab" again to activate MetaNURBS. We are just going to freeze these patches right away so hit "ctrl+d" to do this. This Object should now have 768 Polygons, and we'll leave it there, Picture 23 shows how my Doorknob turned out.



Picture 23: The finished Doorknob

Before we Union this Doorknob with it's door, we need to move it a bit, so activate the Move Tool and bring up the Numeric Panel, then enter the following values.

X	-15mm
Y	0
Z	0

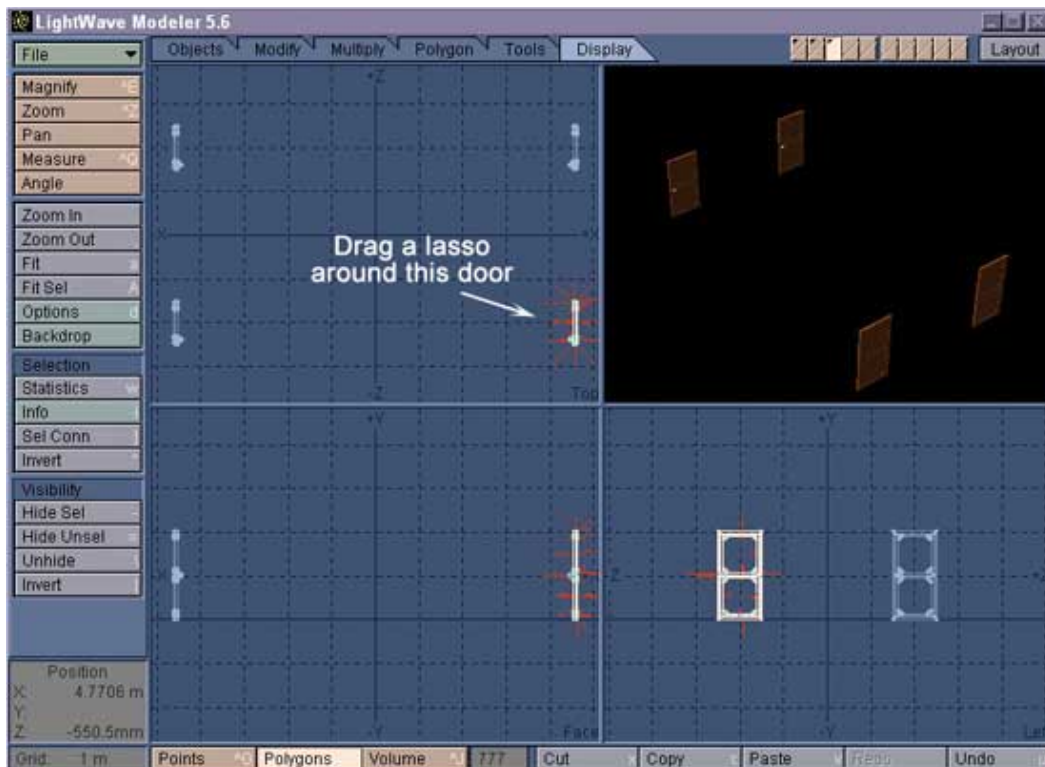
Now switch to Layer 3 and put Layer 4 in the background. Activate the Boolean Tool and select the Union Operation, then click OK to perform it. Merge the Points, and delete the Doorknob in Layer 4, now we just need to clone this Door a few times.

We can't just use the Mirror tool this time, because then the Doorknobs would end up on the opposite side. What we need to do is simply copy the Door we have in Layer 3 and paste it in Layer 4, so do that now. Keep Layer 4 activated and bring up the Numeric Panel for the Move Tool, then use the following settings.

X	0
Y	0
Z	4m

When the door has moved, cut it out from Layer 4 by hitting "x" on your keyboard, then paste it back in Layer 3. Now we can Mirror these doors, so activate the Mirror Tool and bring up it's Numeric Panel, set the Axis to X and keep the Position to 0. Click OK and then hit Enter to perform the Mirror Operation. 4 of the doors should now be in place, but we need 2 more on Level 0.

With Layer 3 activated, and working in Top View, drag a lasso around the first door we made, like in Picture 24.



Picture 24: Drag a lasso around the first door
We made to select its Polygons

Copy this door, and paste it in Layer 4. Activate the Rotate Tool and bring up its Numeric Panel, then enter the following settings.

Axis: Y

Angle: -90 degrees

Centre: 0 on all

Click OK and the Rotation should be performed, then activate the Move Tool and bring up the Numeric Panel, enter the following settings.

X	2,5m
Y	0
Z	0

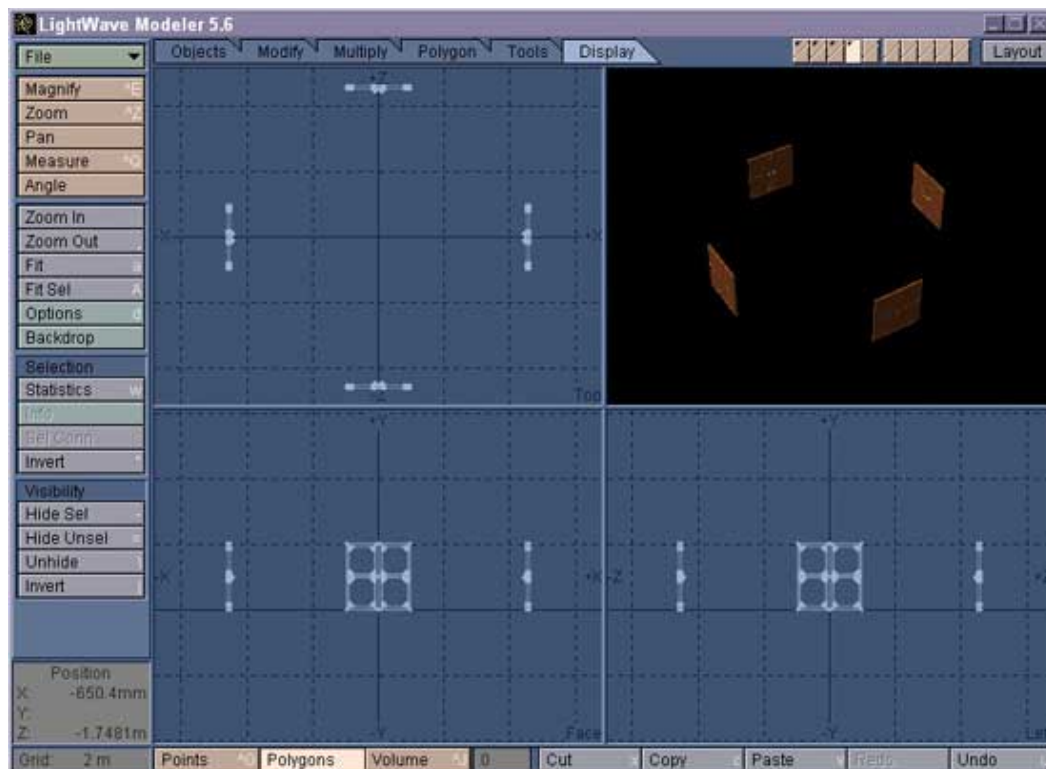
Activate the Mirror Tool and set the Axis to X and the Position to 0, click OK and perform the Mirror Operation. All doors for Level 0 should now be in place, so let's get on with the Level 1 ones. The last double doors we made should still be in Layer 4, so let's copy these and paste in Layer 3. What you have in Layer 3 now should be enough for Level 0. Switch to Layer 4 again and activate the Mirror Tool, bring up the Numeric Panel and set the axis to Z, keep the Position to 0 and click OK, then hit Enter to perform the Mirror Operation. Open up the Polygon Statistics Panel by hitting "w" on your keyboard, and click the + next to Total Polygons. This should select all the Polygons in Layer 4, which should be an amount of 3108. Close down the Statistics Panel and hit "c" to copy these, then "v" in the same Layer to paste them again. Keep the Polygons selected and activate the Rotate Tool, bring up the Numeric Panel and use the following settings.

Axis: Y

Angle: -90 degrees

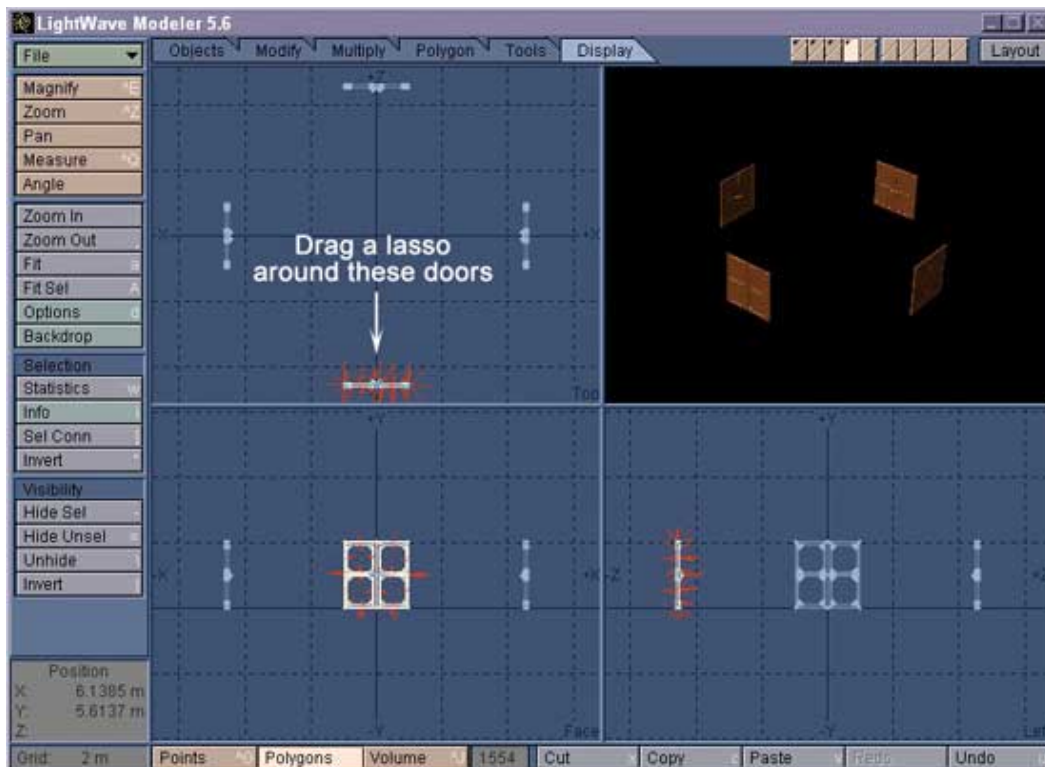
Centre: 0 on all

Click OK and the selected doors should be rotated. You should now have 8 doors in Layer 4, like in Picture 25. We need to delete two of these though.



Picture 25: We only need to delete two of these and we're done

Working in Top View, drag a lasso around the doors in the bottom like in Picture 26.

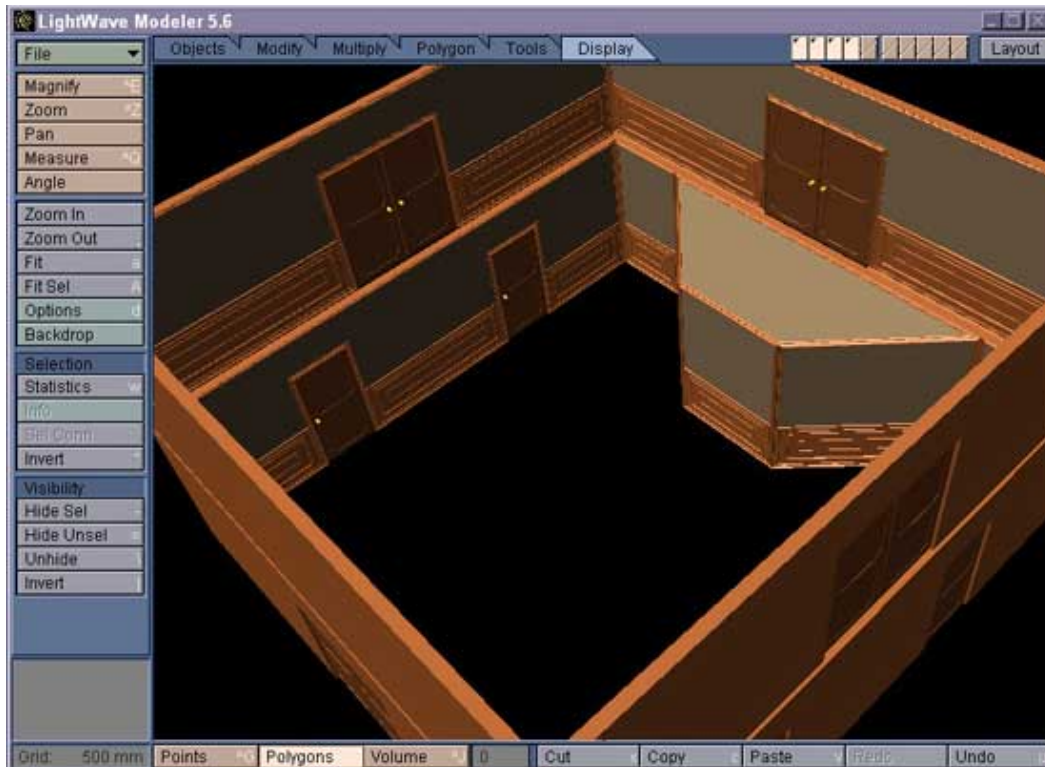


Picture 26: Drag a lasso around these two doors

With these two doors selected, hit the “Delete” key since we don’t need them. All we need to do now is to move these doors a bit along the Y-axis, so activate the Move Tool, bring up the Numeric Panel and enter the following settings.

X	0
Y	2,95m
Z	0

Okay, the doors are finished! You can now make all 4 Layers active to see what they look like in the Perspective View. Picture 27 is what mine looks like.



Picture 27: The Walls and the Doors are finished!

Switch to Layer 3 and save these Doors as "Level0_Doors.lwo". Switch to layer 4 and save these Doors as "Level1_Doors.lwo". Lets get on with Building the Floors!

Chapter 4 – Building Floors and Roofs

You don't need to delete the objects we have in Layer 1-4, we've got enough Layers left for the next procedures. The Level 0 Floor is not that complicated to do, we just need to make a box and we are done. Switch to Layer 5, activate the Box Tool and bring up the Numeric Panel, then enter the following settings.

	LOW		HIGH		Segments
X	-4,65m	X	4,65m	X	1
Y	-50mm	Y	0	Y	1
Z	-4,65m	Z	4,65m	Z	1

Click OK and then Enter to create this box. Open up the Surface Panel and create a new surface called Floor, then give this a brown colour (R: 130 G: 100 B: 80). Set the Specularity to 0%, and Smoothing should be OFF. That's it for the Level 0 Floor, switch to Layer 6 now so we can create the Floor for Level 1.

Activate the Box Tool again and bring up the Numeric Panel, enter the following settings.

	LOW		HIGH		Segments
X	-4,65m	X	4,65m	X	1
Y	2,8m	Y	2,95m	Y	1
Z	-4,65m	Z	4,65m	Z	1

Switch to Layer 7 and activate the Box Tool again, enter the following values in the Numeric Panel.

	LOW		HIGH		Segments
X	-2,5m	X	2,5m	X	1
Y	2,5m	Y	3m	Y	1
Z	-5m	Z	2,5m	Z	1

Click OK and then hit Enter to create this box. Switch to Layer 6 and put Layer 7 in the background, then perform a Boolean Subtract Operation, merge points when finished. 8 points should be eliminated. Switch to Layer 7 again and delete this box, then activate the Box Tool and bring up the Numeric panel, enter the following settings.

	LOW		HIGH		Segments
X	-2,6m	X	2,6m	X	1
Y	2,5m	Y	3m	Y	1
Z	-5m	Z	2,6m	Z	1

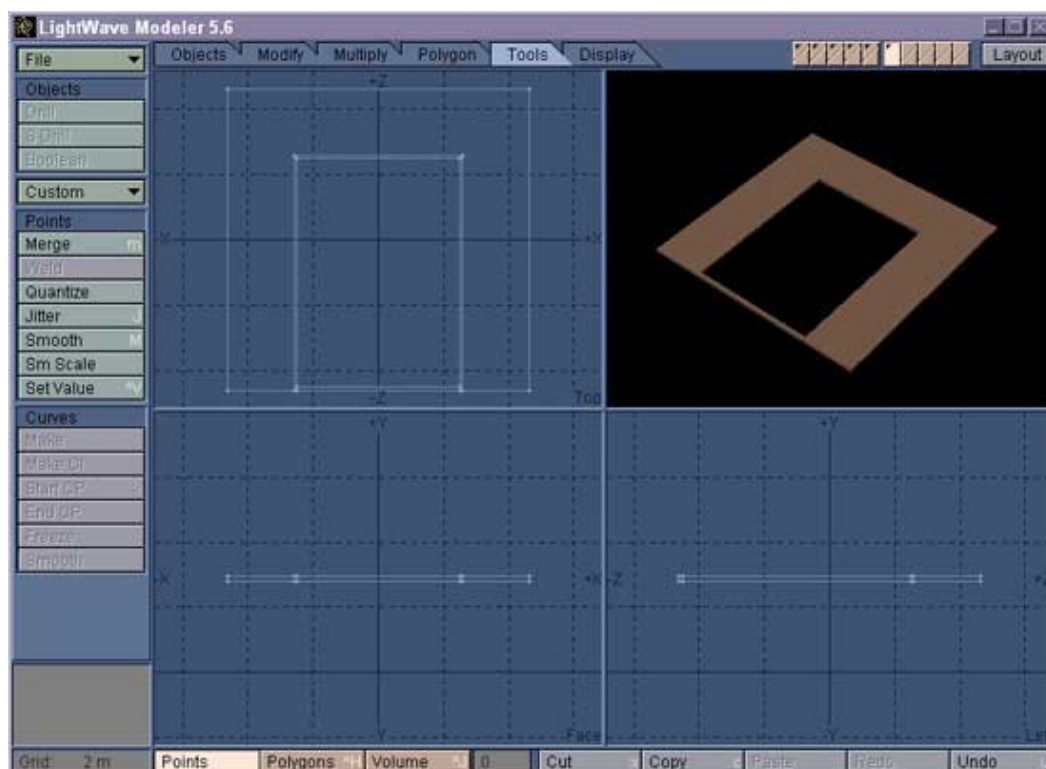
Click OK and then Enter to create this box. Now switch to Layer 6 again and put Layer 7 in the background. Then activate the S Drill Tool and select the Slice Operation, click OK and the Slice should be performed. Delete the box in Layer 7 when you are finished.

Keep Layer 7 the active one and activate the Box Tool once more, bring up the Numeric Panel and enter the following settings.

	LOW		HIGH		Segments
X	-2,5m	X	2,5m	X	1
Y	2,8m	Y	2,95m	Y	1
Z	-4,65m	Z	-4,5m	Z	1

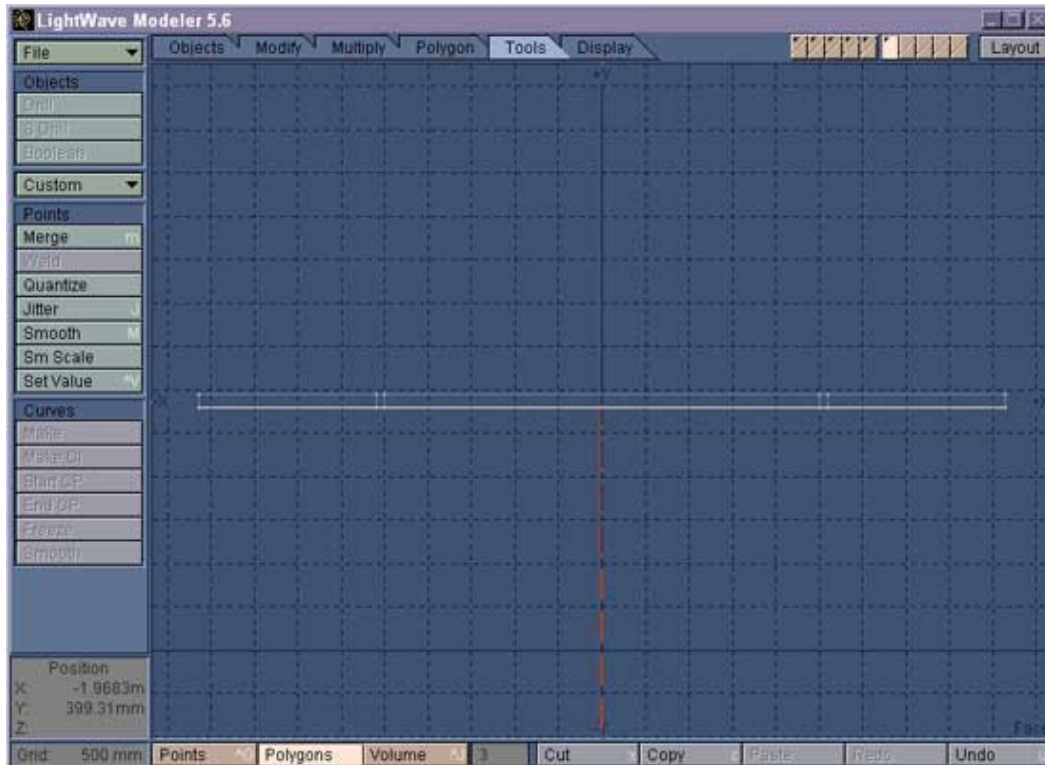
Click OK and then hit Enter to create this Box. Switch to Layer 6 and put Layer 7 in the background. Activate the Boolean Tool and use the Union Operation this time. Merge the points when finished, and delete the box in Layer 7, then switch back to Layer 6.

What you have in Layer 6 now should look something like Picture 28.



Picture 28: The basic Level 1 Floor

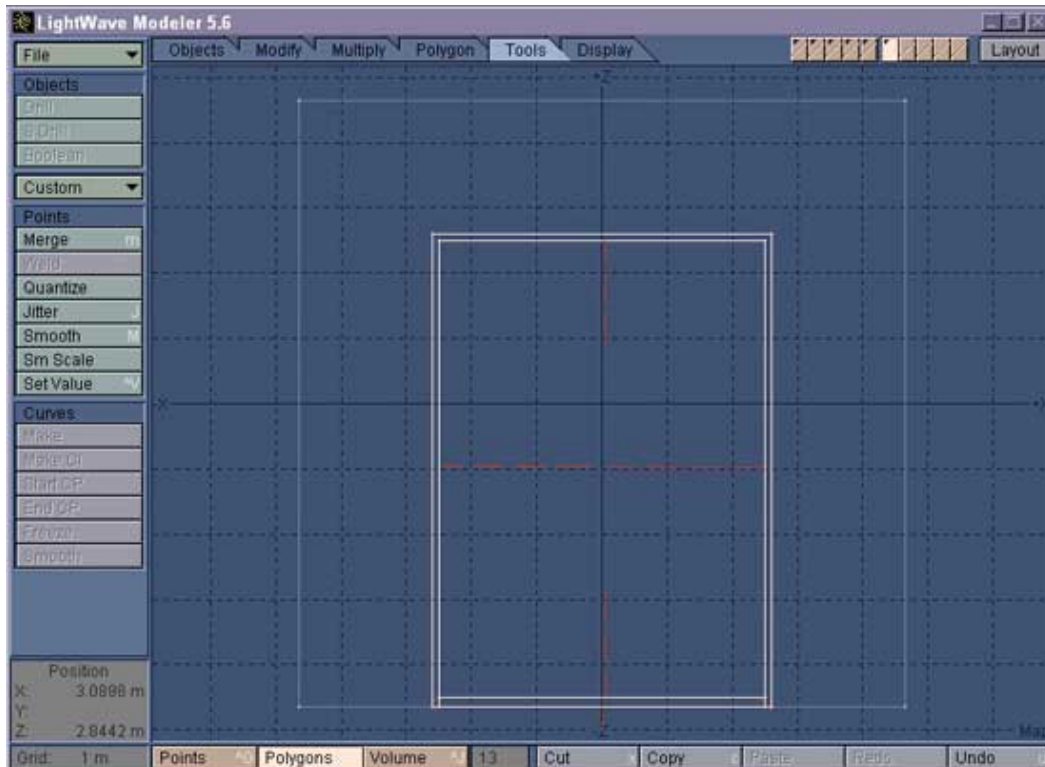
What we have to do now might be a bit tricky. The top Polygons of this object should later become the Level 1 Floor. The bottom Polygons will be the Roof of Level 0, and the thin border we sliced earlier will have the Walls_Wood Surface on them. Bring up the Surface Panel and select the Floor surface, then apply this. Now we are sure that all of the Polygons are carrying the Floor surface. Size up the Front View window, and then drag a lasso around the bottom Polygons to select them, like in Picture 29.



Picture 29: Select the Bottom Polygon in Front View

With this Polygon selected, open up the Surface panel and create a new Surface called Roof, give it a brown colour (R: 100 G: 70 B: 60).

Now size up the Top View and drag a lasso around all the Polygons we sliced earlier, like in Picture 30.



Picture 30: Drag a lasso around these Polygons

With these Polygons selected, activate the Knife Tool and bring up the Numeric Panel, enter the following settings.

Axis: Y

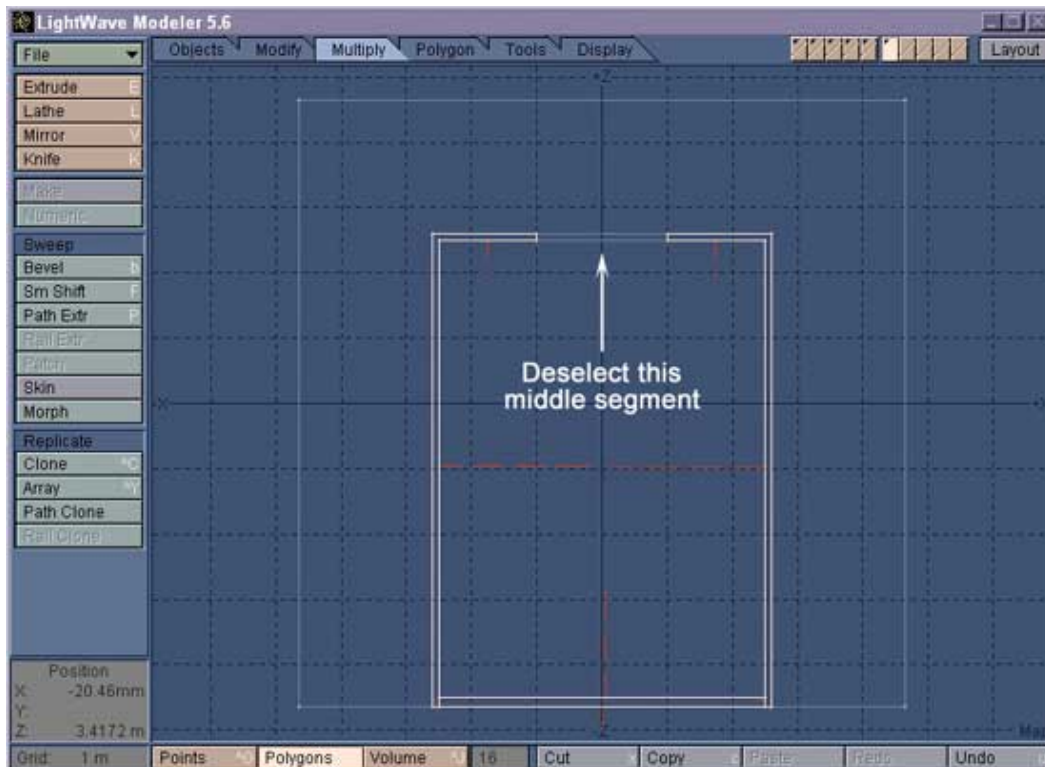
	Start		End
X	-1m	X	-1m
Y	0	Y	0
Z	5	Z	2

Click OK and then hit Enter to perform the Knife Operation. Keep the Knife Tool activated and bring up the Numeric Panel again, enter the following settings.

Axis: Y

	Start		End
X	1m	X	1m
Y	0	Y	0
Z	5	Z	2

Click OK and hit Enter to perform the Knife Operation. The side we sliced should now have three segments, and I want you to drag a lasso around the middle one to deselect it, like in Picture 31.



Picture 31: Deselect the middle segment

If you did this part right, you should now have an amount of 16 Polygons selected. Open up the Surface Panel and select the Walls_Wood surface, then click Apply. Keep the Polygons selected and open up the Bevel Panel, then perform 3 Bevels with the following settings.

	Inset	Shift
1	0	15mm
2	15mm	5mm
3	15mm	-5mm

Deselect everything and the Level 1 Floor is finished. Now we just have to take care of the Level 1 Roof, which should be quite easy.

Switch to Layer 7 and activate the Box Tool, bring up the Numeric Panel and use the following settings.

	LOW		HIGH		Segments
X	-4,65m	X	4,65m	X	1
Y	5,75m	Y	5,90m	Y	1
Z	-4,65m	Z	4,65m	Z	1

Click OK and then hit Enter to create the Box, and all we need to do now is change the surface to Roof which we created earlier, and we are done!

Switch to Layer 5, and save this Object as "Level0_Floor.lwo"

Switch to Layer 6, and save this Object as "Level1_Floor.lwo"

Switch to Layer 7, and save this Object as "Level1_Roof.lwo"

Everything we have made so far should now be saved.

Chapter 5– Building the Stairs

Since we saved all the Objects at this point, we can now delete them, and the quickest way might be to just use the “Clear” function from the slide down menu. We need to be sure we have enough Layers when we start out with building the stairs. Start out by activating the Box Tool and bring up its Numeric Panel, then use the following settings.

	LOW		HIGH		Segments
X	-1m	X	1m	X	1
Y	-46mm	Y	180mm	Y	1
Z	0	Z	50mm	Z	1

Click OK and then hit Enter to create the Box. We are going to create one more box in this Layer so bring up the Numeric Panel again and enter the following settings.

	LOW		HIGH		Segments
X	-1m	X	1m	X	1
Y	130mm	Y	180mm	Y	1
Z	0	Z	330mm	Z	1

Click OK and then hit Enter to create the box. Activate the Clone Tool under the Multiply menu and enter the following settings.

Number of Clones: 15

Offset

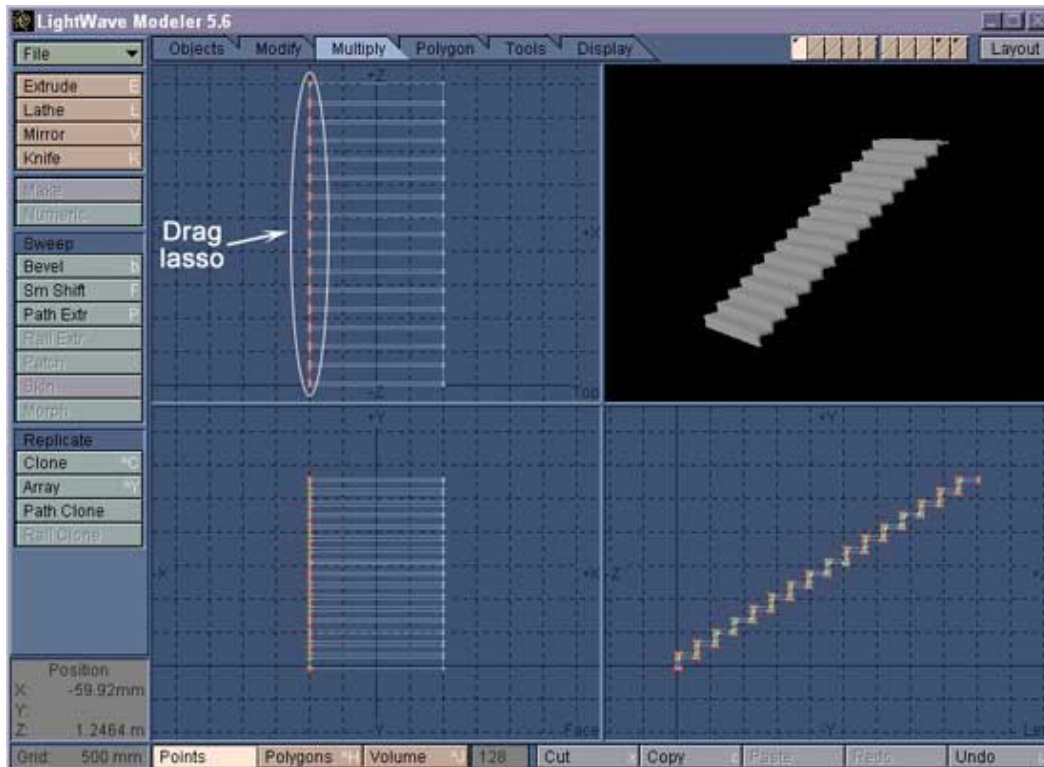
X: 0

Y: 175mm

Z: 280mm

Leave the rest to the default settings and click OK. We now have enough steps of this stair to reach the second floor. Switch to Layer 10 and load in the “Level1_Floor.lwo” object we saved earlier, then switch to Layer 9 and load in the “Level0_Floor.lwo” object. The stair, which we have in Layer 1, is not in the right position yet, but we will fix that later on. Switch to Layer 1 now, and then switch to Points Mode by clicking the Points button at the bottom of Modeler.

Working in either Front or Top View, drag a lasso around all the points of this stair that make up the left side, like in Picture 32.



Picture 32: Select all the points on the left side

I want you to copy these points, so press "c" on your keyboard, then switch to Layer 2 and press "v" to paste them there. There should only be points in Layer 2 now, no Polygons. Activate the Set Value Tool under the Tools menu, set the Axis to X and the Value to 0, then click OK. Copy these points now and paste them in Layer 3. Use the Set Value Tool again in Layer 3 but set the axis to Y this time, and the Value to 0. Merge the points when finished, 140 Points should be eliminated. Cut the points out of Layer 3 and paste them back in Layer 2, and then size up the Side View to the max. Press "a" to fit the points in the Side View.

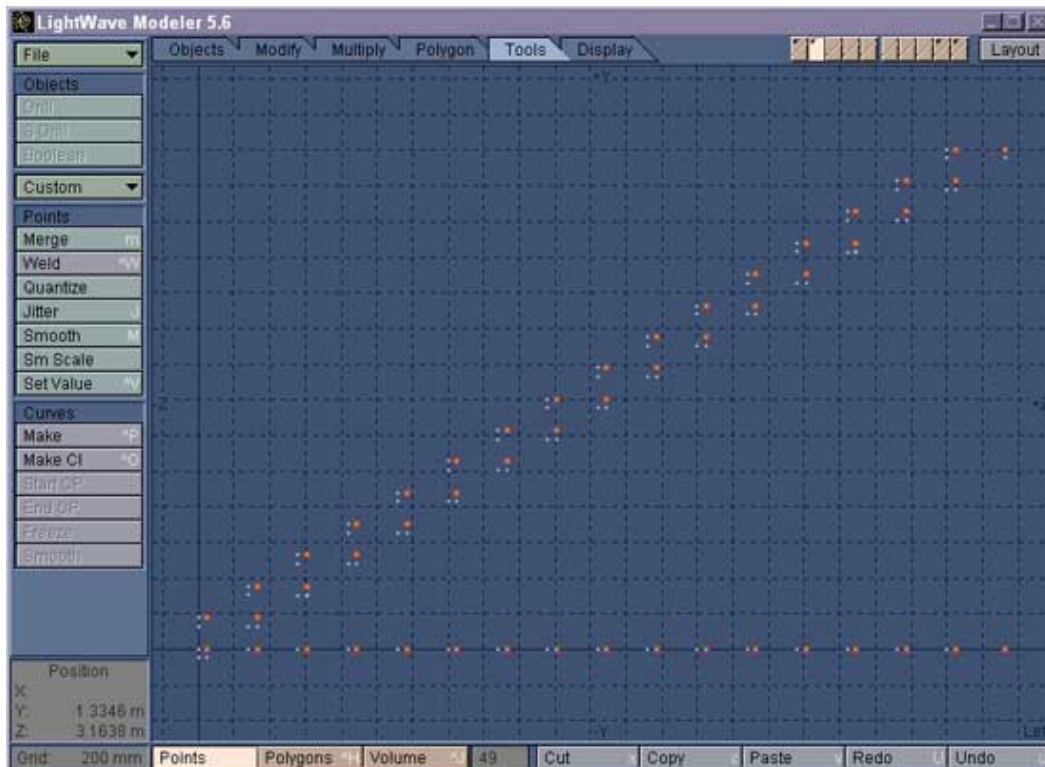
What you have in Layer 2 now should look something like Picture 33.



Picture 33: This is what Layer 2 should look like at this point

We are going to use some of these points to create a Polygon, which will be the side of the stairs later on. But we don't need all of these points.

Keep the Side View window sized up to max, and start in the lower right corner by selecting that point, then, moving clockwise, select points like in Picture 34. This might take some time, and be sure to select the same points that I have selected.



Picture 34: Select these points clockwise

The total amount of Points that should be selected if you did this right is 49. Hit "p" on your keyboard to create a Polygon out of these points, then bring up the Points Statistics Panel and click the + next to "0 Polygons". 112 points should be selected, and we can just delete these, since we don't need them. Activate the Move Tool and bring up the Numeric Panel, then enter the following settings.

X	0
Y	-25mm
Z	-25mm

Click OK and the Polygon should move a bit. Stay in Points Mode and drag a lasso around all the points that make up the bottom of this Polygon, like in Picture 35.



Picture 35: Drag a lasso around these points

Activate the Set Value Tool and set the axis to Y, and the value to 0, then click OK.

Open up the Surface Panel and give this Polygon the Walls_Wood surface. Switch to Layer 1 and give stair-steps we have there the Walls_Wood surface as well, then switch back to Layer 2. Activate the Move Tool and bring up the Numeric Panel, enter the following settings.

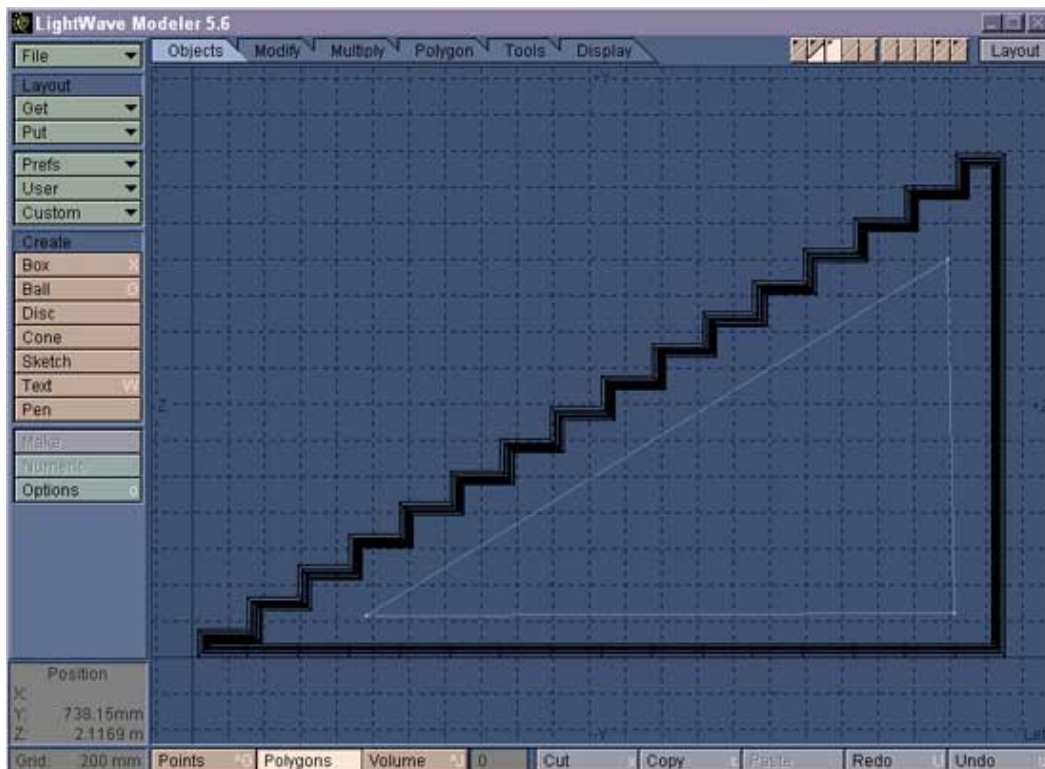
X	950mm
Y	0
Z	0

When the Polygon has moved, activate the Mirror Tool and set the axis to X, the position to 0 and then click OK. Hit Enter to perform the Mirror Operation. Switch to Polygon Mode now and select the two Polygons by dragging a lasso around them, then use the Bevel Tool 10 times with the following settings – one by one.

	Inset	Shift
1	20 mm	-20 mm
2	10 mm	10 mm
3	10 mm	-10 mm
4	2 mm	5 mm
5	4 mm	5 mm
6	6 mm	5 mm
7	8 mm	3 mm
8	10 mm	0 mm
9	5 mm	-5 mm
10	0 mm	-10 mm

When the Bevel Operations are finished, we need to set a surface to the selected Polygons so we can easily select them later on. Open up the Surface Panel and select the Default Surface from the list, then click Apply. Deselect everything and activate the Move Tool, bring up the Numeric Panel and move this –2m on the Z-axis, keep the others at 0. Switch to Layer 1 and do the same here, move it –2m on the Z-axis.

Switch to Layer 3 and put Layer 2 in the background, and then activate the Pen Tool under the Objects Tab. Size up the Side View and press “a” to fit the background Layer in the Side View. Make a three point Polygon looking like the one in Picture 36. Don’t worry if the Polygon is nice looking, we can fix it later.



Picture 36: Make a three point Polygon,
Don't worry if it doesn't look good

Now we need to position these three points one by one. Keep the Side View sized up to max and switch to Point Mode. Deselect everything, and then select the Point to the left in this triangle. Hit the "i" key on your keyboard to bring up the Point Info Panel.

This Panel tells you the exact information on where this point is located, but we need to change it to our own values, so use the following values with this first Point.

X	0
Y	200mm
Z	-1,2m

Click OK and the point will move. Deselect this point now and select the bottom-right point, bring up the Point Info Panel again and use the following settings.

X	0
Y	200mm
Z	2,3m

Click OK, deselect the point and select the third point, which would be the one in the upper right corner. Once again bring up the Point Info Panel and use the following settings.

X	0
Y	2,4m
Z	2,3m

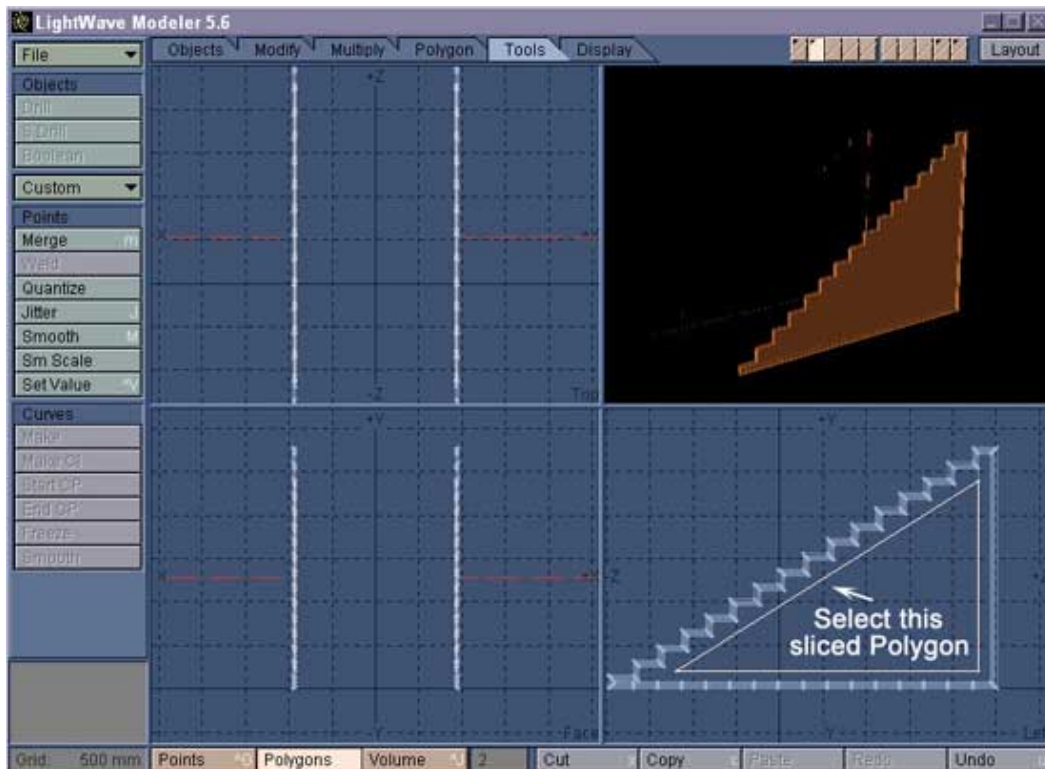
Now you can size down the Side View. Activate the Extrude Tool in the Multiply tab and bring up the Numeric Panel. Use the following settings.

Axis	X
Segments	1
Extent	-3m

Click OK and then hit Enter to perform the Extrusion. In the Objects Tab you should have a Custom slide-down menu. Look up a plugin called Center1D, and use this on the X-axis. The extruded triangle should now centre along the X-axis. Switch back to Layer 2 and put Layer 3 in the background, then activate the S Drill Tool and use the Slice Operation, click OK to perform. When the Slice has been performed, you can delete the extruded triangle in Layer 3, we don't need it anymore, then switch back to Layer 2 when finished. Switch to Polygon Mode and bring up the Polygon Statistics panel. Select the Default surface in the slide-down menu, and click the + next to "with surface" to activate these. The first thing we will do with these Polygons is giving them the Walls_Wood surface, so open up the Surface Panel to do this.

This three point Polygon we created will add some detail to the sides of this stair, after we sliced it we just need to Bevel it a few times to make a good looking side.

The amount of Polygons selected now should be 4, and we need to deselect 2 of these. Working in Side View, use your mouse and click once on the outer Polygons to deselect these, leaving only the Sliced Triangle selected. Have a look at Picture 37 to see if you got it right.



Picture 37: Select these two Sliced Polygons

Activate the Bevel Tool and perform three Bevels with the following settings.

	Inset	Shift
1	5mm	20mm
2	20mm	0
3	10mm	-10 mm

Keep the Polygons selected and activate the Knife Tool, then bring up the Numeric Panel and use the following settings.

Axis: X

	Start		End
X	0	X	0
Y	3m	Y	-1m
Z	550mm	Z	550mm

Click OK and then Enter to perform the Knife Operation, then bring up the Numeric Panel again and use the following settings.

Axis: X

	Start		End
X	0	X	0
Y	3m	Y	-1m
Z	1,425m	Z	1,425m

Click OK and then hit Enter to perform the Knife Operation.

Keep the Polygons selected and perform 10 Bevels, using the following settings.

	Inset	Shift
1	50mm	0
2	10mm	10 mm
3	50mm	0
4	10mm	-10mm
5	10mm	10mm
6	10mm	-10mm
7	150mm	0
8	10mm	10mm
9	20mm	0
10	10mm	-10 mm

Okay, the sides of the stairs are finished. Now lets add some detail to the stair-steps we have in Layer 1, so activate that Layer now. We will use the Knife Tool to cut these stair-steps, which will later become a red carpet.

Keep everything here unselected, and bring up the Bevel Panel, bevel this once with these settings.

	Inset	Shift
1	5mm	5mm

Activate the Knife Tool and bring up its Numeric Panel, use the following settings.

Axis: Z

	Start		End
X	700mm	X	700mm
Y	-1m	Y	3m
Z	0	Z	0

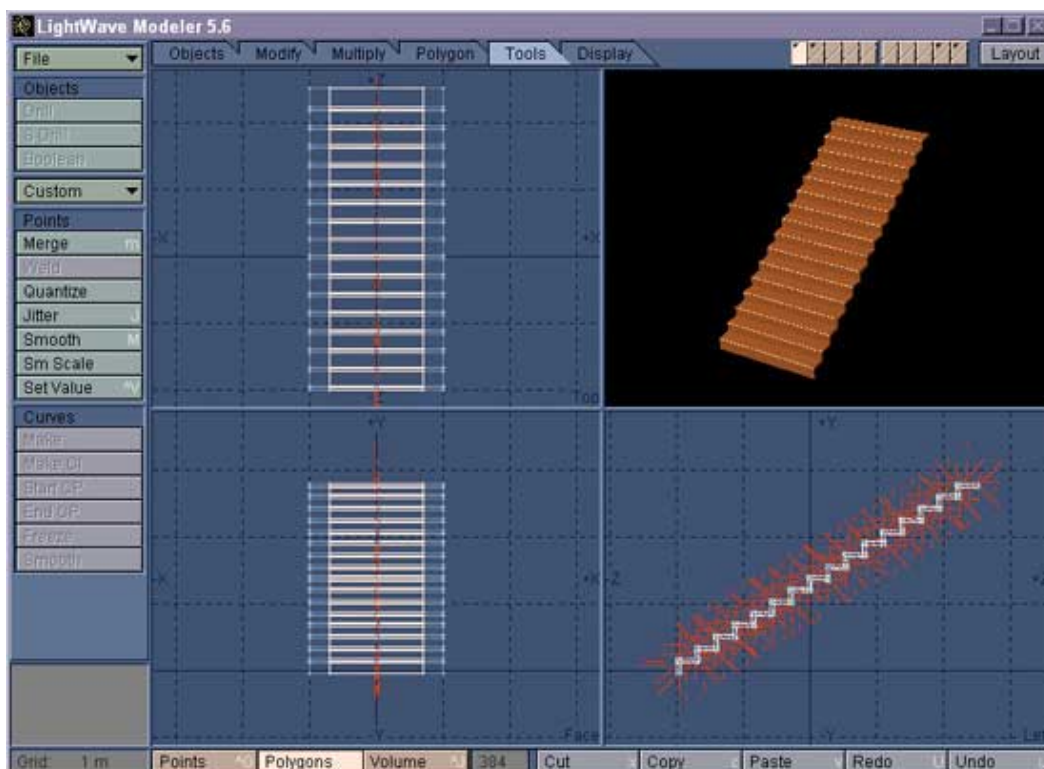
Click OK and then hit Enter to perform the Knife Operation. Bring up the Numeric Panel for the Knife Tool again and use these settings.

Axis: Z

	Start		End
X	-700mm	X	-700mm
Y	-1m	Y	3m
Z	0	Z	0

Click OK and then hit Enter to perform the Knife Operation.

Working in Front View, drag a lasso around the middle segment of Polygons we just cut to select these, like in Picture 38.

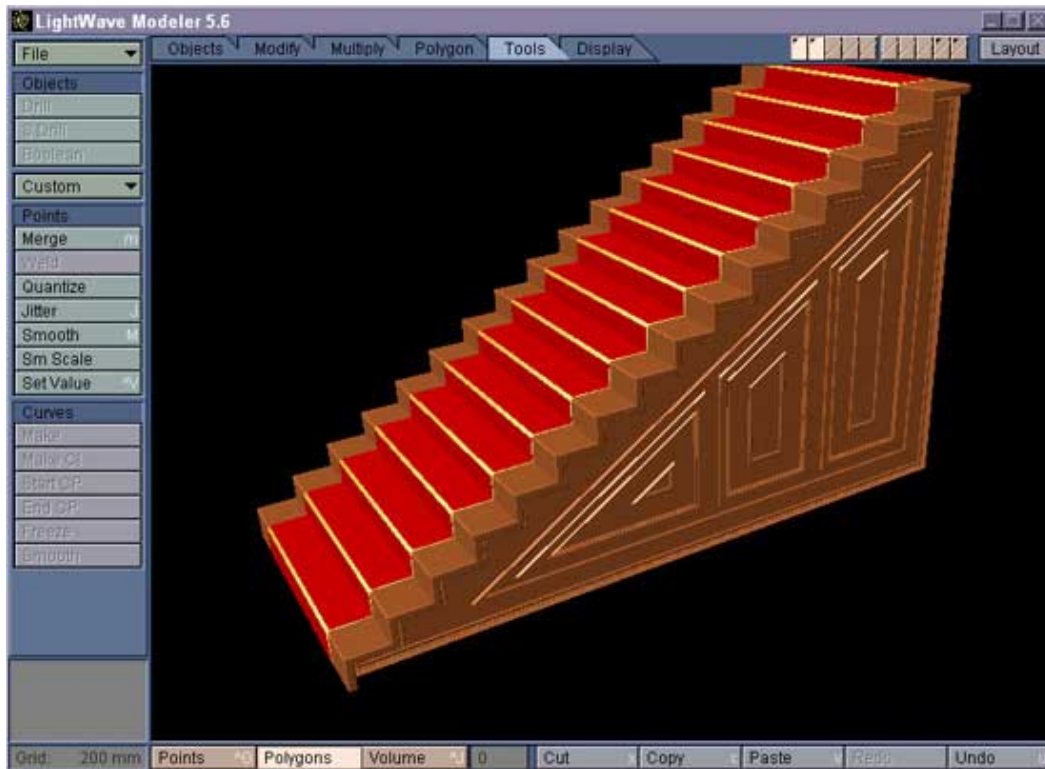


Picture 38: Select the middle segment of Polygons

Bring up the Surface Panel and create a new surface called Carpet_Gold. Give this a Yellow colour (R: 240 G: 200 B: 60). Set the Specularity to 100%, the Glossiness to 16, and activate Smoothing and set the Smoothing Angle to 89,5, then click Apply. Keep these Polygons selected and bring up the Bevel Panel. Use the following settings.

	Inset	Shift
1	5mm	5mm

Keep these Polygons selected and bring up the Surface Panel again. Create a new surface called Carpet_Red, and give this a red colour (R: 255 G: 0 B: 0). Leave the Specularity to 0%, and turn off Smoothing. Click Apply and the selected Polygons should turn red in the Perspective View. Picture 39 is what my stairs looks like at this point.



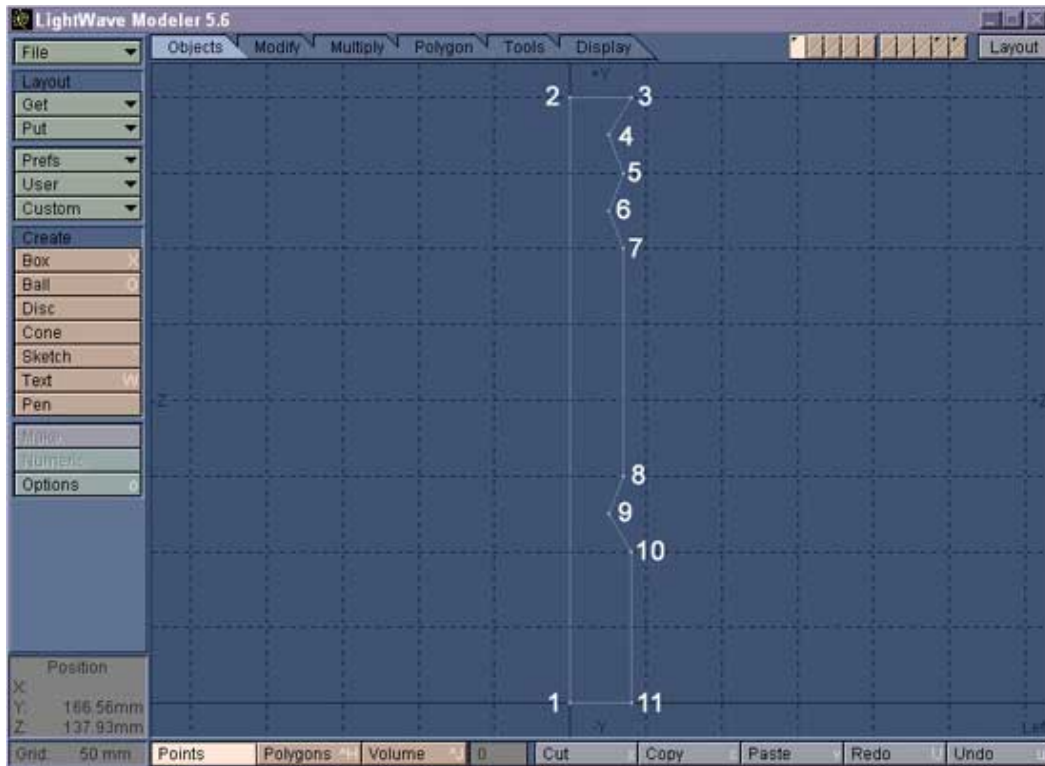
Picture 39: What my stairs looks like

Switch to Layer 3 and put both Layer 1 and 2 in the background. Activate the Boolean Tool and select the Union Operation. You may now delete the objects in Layer 1 and 2, since we joined these together in Layer 3. Merge the Points in Layer 3. 320 points should be eliminated. Save the object as "Stairs.lwo". Delete the Stairs object in Layer 3 after you've saved it.

Chapter 6 – Creating the Railings

Now we will create the Rail-Holders. These following procedures might take some time, but the result is quite pleasing. When this first Rail-Holder is finished we will clone it a few times.

Size up the Side View and Zoom in until you have a Grid Size of 100mm. Activate the Pen Tool and create a 11 Point Polygon, like the one in Picture 40. It is not important where you place the points since we will fix it later.



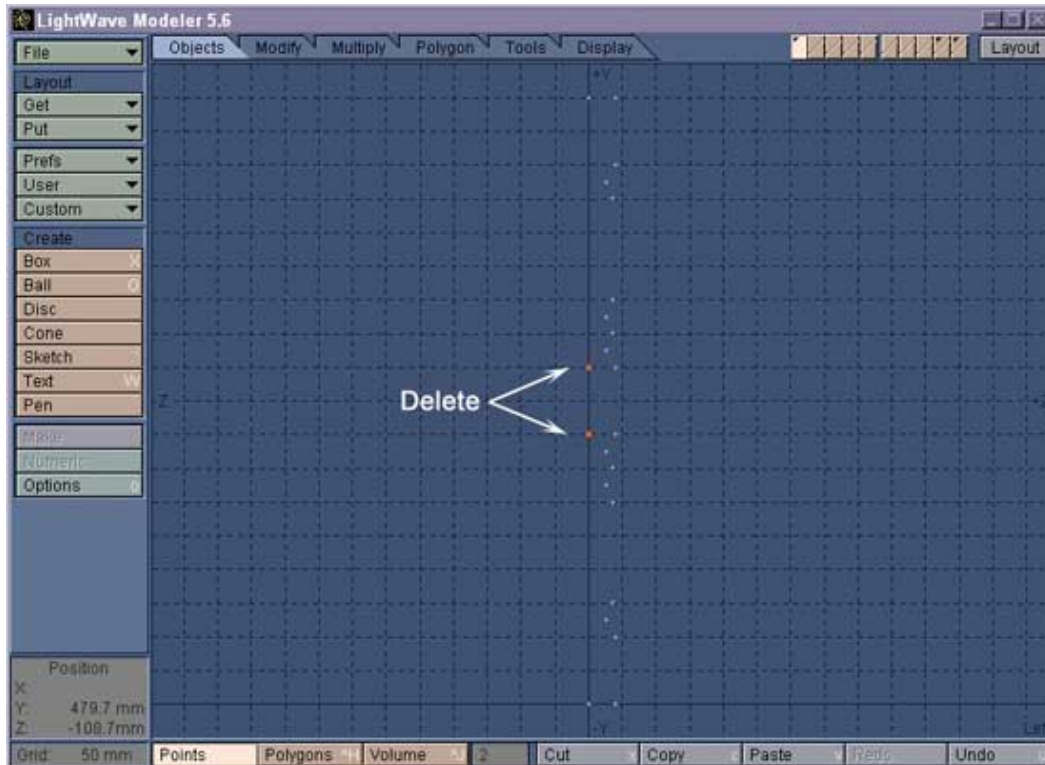
Picture 40: Create an 11 Point Polygon

As you can see on Picture 40, I have named each Point with a number, and now I want you to place these Points using the values shown below, start with Point 1 and move Clockwise.

	Y Position	Z Position
1	0mm	0mm
2	400mm	0mm
3	400mm	40mm
4	375mm	25mm
5	350mm	35mm
6	325mm	25mm
7	300mm	35mm
8	150mm	35mm
9	125mm	25mm
10	100mm	40mm
11	0mm	40mm

When all of these Points have been positioned one by one, kill the Polygon by hitting "k" on your keyboard. Activate the Mirror Tool and set the Axis to Y, the Position to 450mm and click OK, then hit Enter to perform the Mirror Operation.

Press "a" now to fit all these points in the Side View. There should be four Points positioned at 0 on the Z-axis, and you can delete the two middle ones, like in Picture 41.

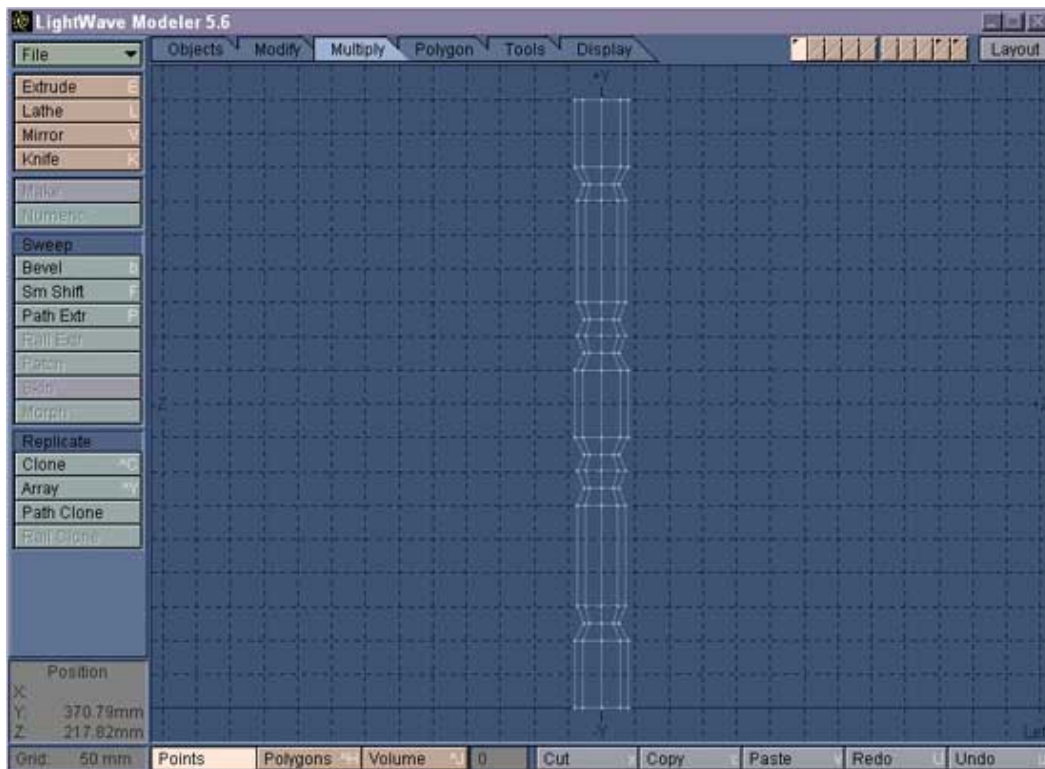


Picture 41: Delete these two points

Now select all these points in Clockwise order, it doesn't matter which one you start out with. When all the points are selected, press "p" on your keyboard to create a flat Polygon. Activate the Lathe Tool under the Multiply menu, and bring up the Numeric Panel, then enter the following values.

Start Angle: 0
End Angle: 360
Sides: 8
Offset: 0
Axis: Y
Center: 0 on all

Click OK and press Enter to perform the Lathe Operation. You should now have something like in Picture 42.



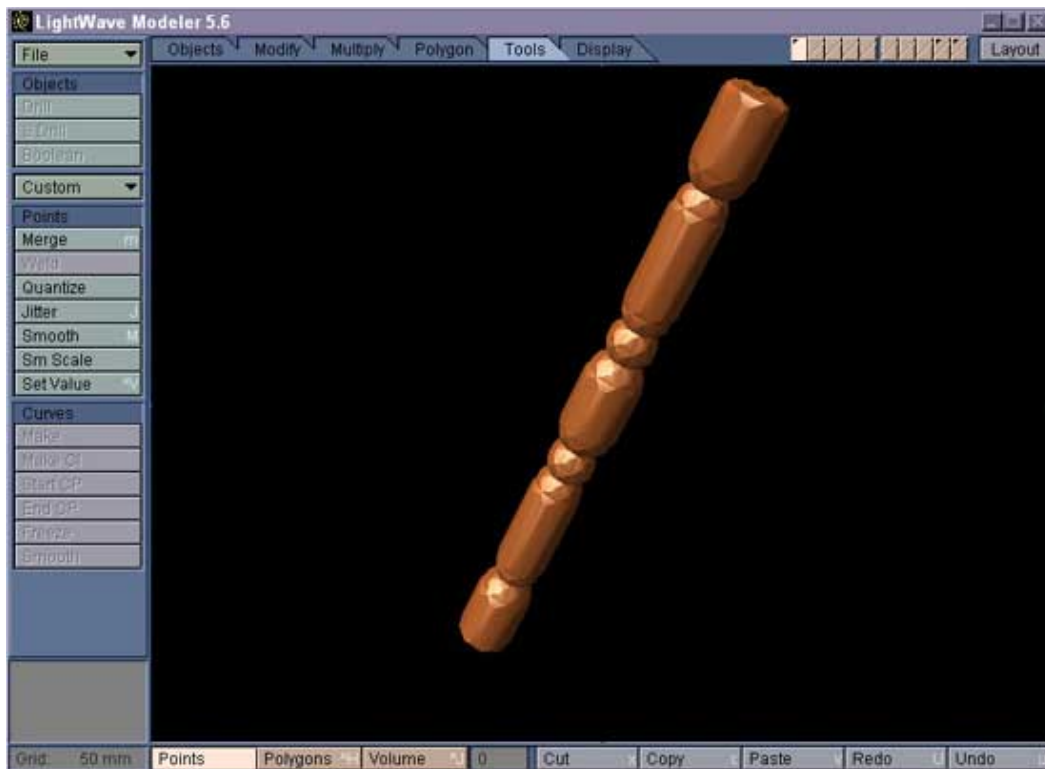
Picture 42: The Lathed Polygon

You can now size down the Side View. Bring up the Surface Panel and create a new Surface called Rails, and give it a brown colour (R: 170 G: 90 B: 40). Set the Specularity to 75%, Glossiness to 16 and activate Smoothing, then give it a Smoothing Angle of 30.

Keep everything Unselected and activate the Bevel Tool, the bevel it once with the following settings.

	Inset	Shift
1	10mm	5mm

This first Rail-Holder is finished; we just need to clone it now. Have a look at Picture 43 to see if yours looks the same as mine.



Picture 43: The finished Rail-Holder

Switch to Layer 8 and load the "Stairs.lwo" object we saved earlier. We want to see how these Rail-Holders look together with the stairs in the end.

Switch back to Layer 1 and activate the Move Tool, then bring up the Numeric Panel and use the following settings.

X	900mm
Y	180mm
Z	-1,86m

Next activate the Clone Tool and use the following settings.

Number of Clones: 15

Offset

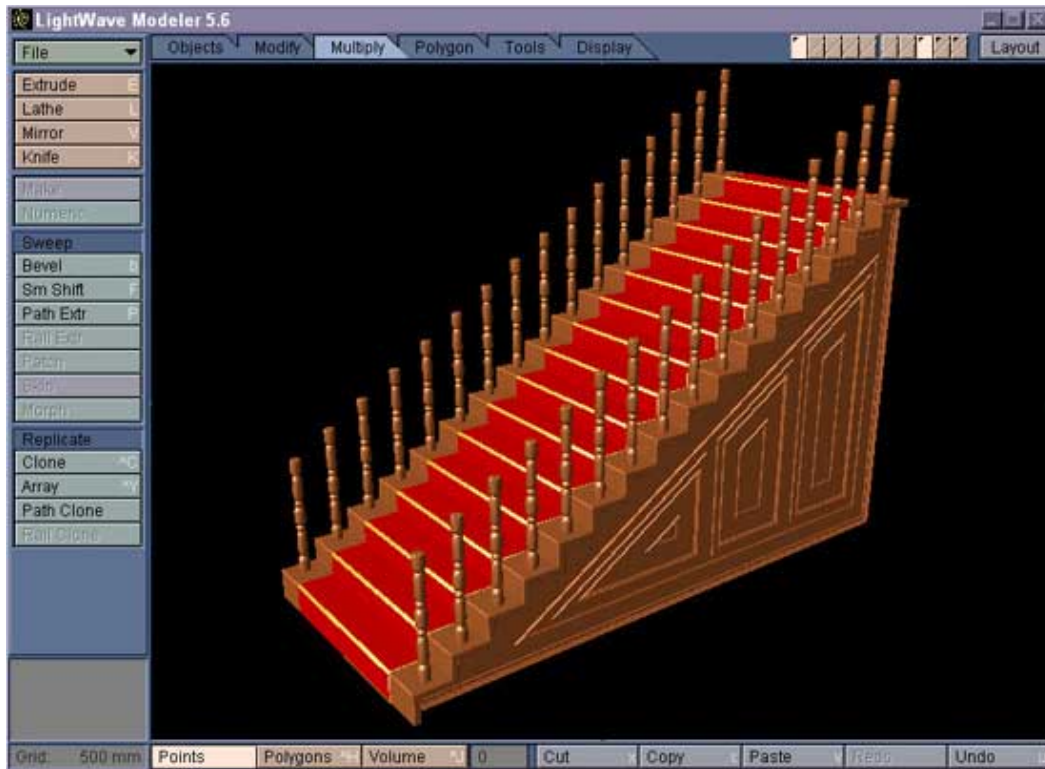
X: 0

Y: 175mm

Z: 280mm

Leave the rest to the default settings and click OK. When the Rail-Holder is cloned, activate the Mirror Tool and bring up the Numeric Panel. Set the Axis to X and the Position to 0, and then click OK. Hit Enter to perform the Mirror Operation.

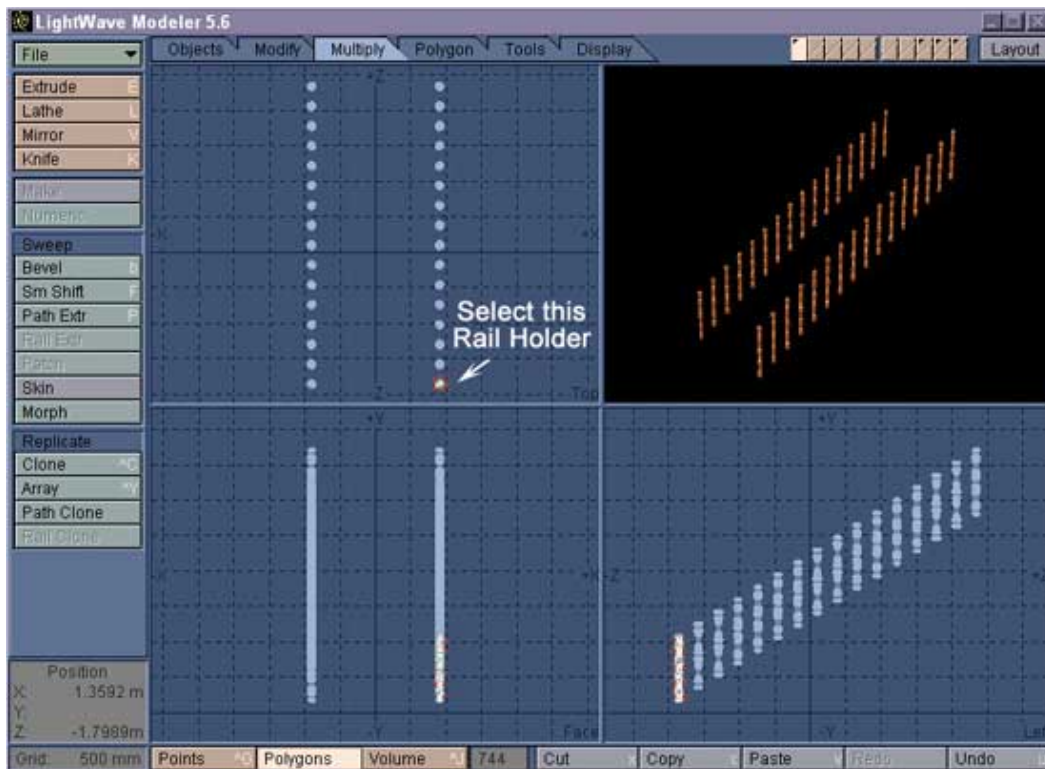
The Rail-Holders for the stairs are now finished, and Picture 44 shows how mine looks together with the stairs object.



Picture 44: The cloned Rail-Holders together with the stairs

Save the Rail Holders in Layer 1 as "Stairs_RailHolders.lwo".

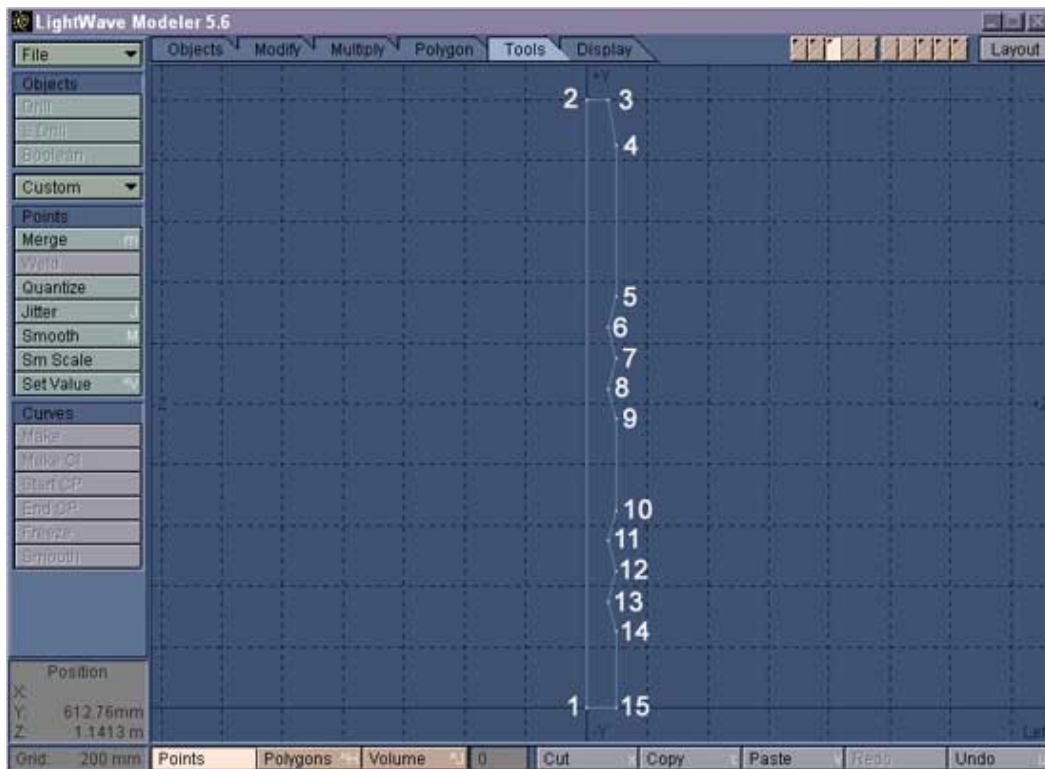
Switch to Polygon Mode and drag a lasso around the First Rail Holder we had, like in Picture 45.



Picture 45: The selected Rail Holder

Press "c" to copy this Rail Holder, then switch to Layer 2 and paste it there.

Switch to Layer 3 and size up the Side View, Zoom in until you have a Grid Size of 200mm, then create a 15 Point Polygon using the Pen Tool, like in Picture 46.



Picture 46: Create a 15 Point Polygon

Now I want you to position all of these points using the values below, start with Point 1.

	Y Position	Z Position
1	0mm	0mm
2	2m	0mm
3	2m	70mm
4	1,85m	100mm
5	1,35m	100mm
6	1,25m	70mm
7	1,15m	100mm
8	1,05m	70mm
9	950mm	100mm
10	650mm	100mm
11	550mm	70mm
12	450mm	100mm
13	350mm	70mm
14	250mm	100mm
15	0mm	100mm

When you have positioned all points, press "k" to kill the polygon. Activate the Mirror Tool and bring up the Numeric Panel, set the Axis to Y and the Position to 2m. Click OK and then hit Enter to perform the Mirror Operation.

Size up the Side View. There should be 3 points that are positioned at 0 on the Z-axis, so select the middle one of these and delete it, like in Picture 47.



Picture 47: Delete this point

Use your mouse and select the points one by one now, going clockwise, and when all the points are selected, press "p" to create a Polygon. Activate the Lathe Tool and bring up the Numeric Panel, then use the following settings.

Start Angle: 0
End Angle: 360
Sides: 8
Offset: 0
Axis: Y
Center: 0 on all

Click OK and then hit Enter to perform the Lathe Operation. Keep everything Unselected and activate the Bevel Tool, then perform 2 bevels with the following settings.

	Inset	Shift
1	20mm	10mm

When the Bevels are finished, activate the Move Tool and bring up the Numeric Panel, then use the following settings.

X	-2,54m
Y	0
Z	2,55m

Switch to Layer 4 and activate the Box Tool, bring up the Numeric Panel and use the following settings.

	LOW		HIGH		Segments
X	-2,65m	X	-2,45m	X	1
Y	-25mm	Y	50mm	Y	1
Z	2,45m	Z	2,65m	Z	1

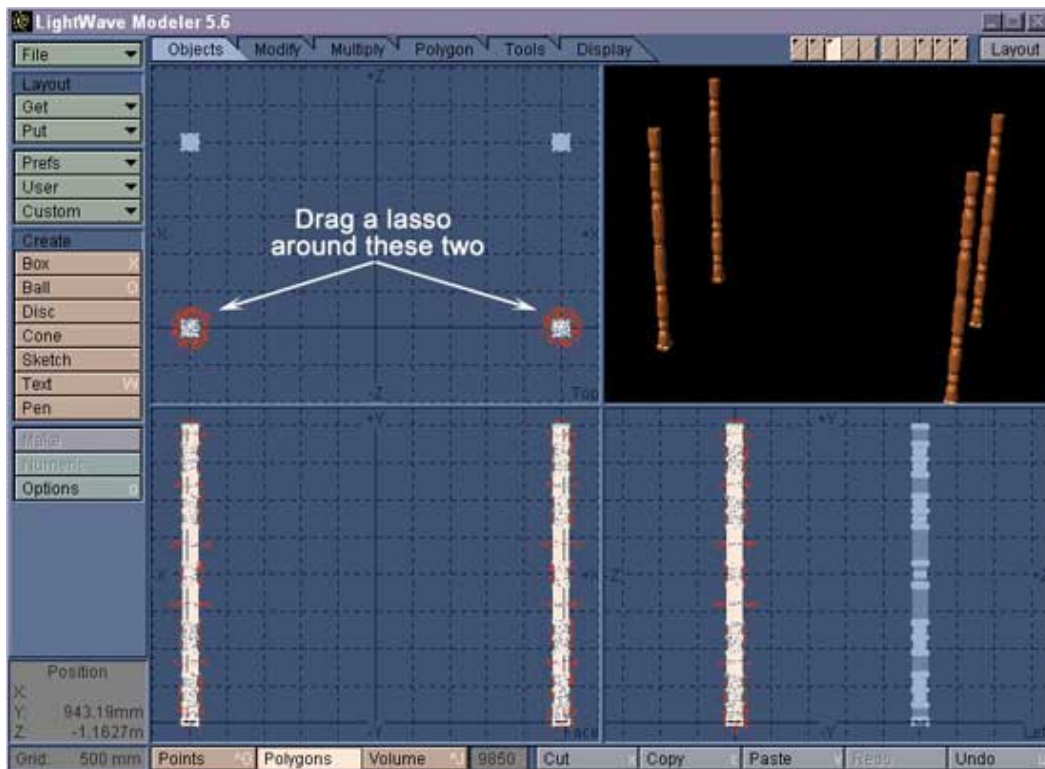
Click OK and then hit Enter to create this box. Activate the Bevel Tool and bevel this once using the following settings.

	Inset	Shift
1	5mm	5mm

Switch to Layer 3 and put Layer 4 in the background, then activate the Boolean Tool and choose the Union Operation. Click OK and then hit Enter to perform it. Merge the points when finished.

Activate the Mirror Tool and bring up the Numeric Panel, set the Axis to X, the Position to 0 and the click OK. Hit Enter to perform the Operation. Keep the Mirror Tool activated and bring up the Numeric Panel again, change the Axis to Z and enter 1,25m for Position. Click OK and then hit Enter to perform the Mirror Operation.

Make sure you are in Polygon mode, and then drag a lasso around the two latest copies of this object, like in Picture 48.



Picture 48: Select these two Ceiling-Supports

Press "c" to copy these two, then press "v" to paste them in the same Layer. Activate the Move Tool and bring up the Numeric Panel, use the following settings.

X	0
Y	0
Z	-4,5m

You should now have 6 of these Ceiling-Supports in Layer 3. Working in Top View, drag a lasso around the top left one, like in Picture 49.



Picture 49: Select the first one we made

Press "c" to copy, then switch to Layer 4, delete the content first, then paste it in. Use the "Custom" Slide-down menu under the Objects tab, and select the Center1D plugin, then use this on the X-axis. Activate the Move Tool, bring up the Numeric Panel and enter the following settings.

X	1m
Y	0
Z	0

Activate the Mirror Tool and bring up the Numeric Panel, then set the Axis to X and the Position to 0, click OK and hit Enter to perform the Mirror Operation. Hit "x" on your keyboard to cut these out of Layer 4, then switch back to Layer 3 and paste them there. Bring up the Surface Panel and select the Rails Surface, then click Apply. Save these Supports as "Ceiling_Supports.lwo".

Switch back to Layer 2 where one of the Rail Holders should be, then activate the Move Tool and bring up the Numeric Panel, use the following settings.

X	1,65m
Y	2,75m
Z	0

Activate the Clone Tool and use the following settings.

Number of Clones: 25

Offset

X: 0

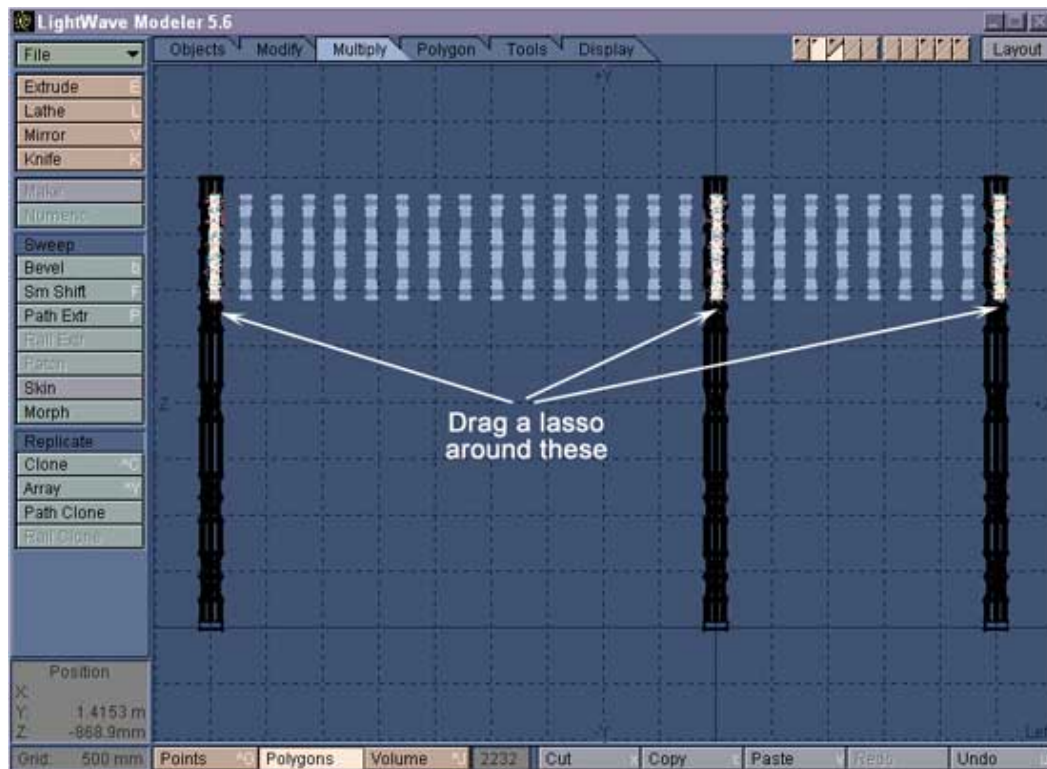
Y: 0

Z: 280mm

When the Cloning is finished, activate the Move Tool and use the following settings.

X	0
Y	0
Z	-2,61m

Three of these Rail Holders are now covered by the bigger Ceiling Supports, so we can delete these three. Size up Front View and use the lasso to select the three shown in Picture 50.



Picture 50: Select these three Rail Holders

When you have selected them, hit "delete" on your keyboard. Activate the Mirror Tool and bring up the Numeric Panel. Set the Axis to X and the Position to 0, then click OK and hit Enter to perform it.

Size up Top View and drag a lasso around the four Rail Holders in the top-right corner, like in Picture 51.



Picture 51: Drag a lasso around these four Rail Holders

Press "c" to copy these and paste them in Layer 4.

Activate the Rotate Tool and bring up the Numeric Panel, then use the following settings.

Axis: Y

Angle: -90 degrees

Center:

X: 2,55m

Y: 0

Z: 2,55m

Activate the Move Tool and bring up the Numeric Panel, then use the following settings.

X	-60mm
Y	0
Z	0

Activate the Mirror Tool and bring up the Numeric Panel, set the Axis to X and the Position to 0, then click OK and hit Enter. Press "x" to cut these Rail Holders, then paste them in Layer 2. Switch back to Layer 4 and activate the Box Tool, bring up the Numeric Panel and use the following settings.

	LOW		HIGH		Segments
X	-2,5m	X	-1m	X	1
Y	3,8m	Y	3,85m	Y	1
Z	2,5m	Z	2,6m	Z	1

Click OK and then hit Enter to make the box. Activate the Mirror Tool and bring up the Numeric Panel, set the Axis to X and the Position to 0, then click OK and then Enter to perform. Switch to Layer 5 and activate the Box Tool again, then bring up the Numeric Panel and use the following settings.

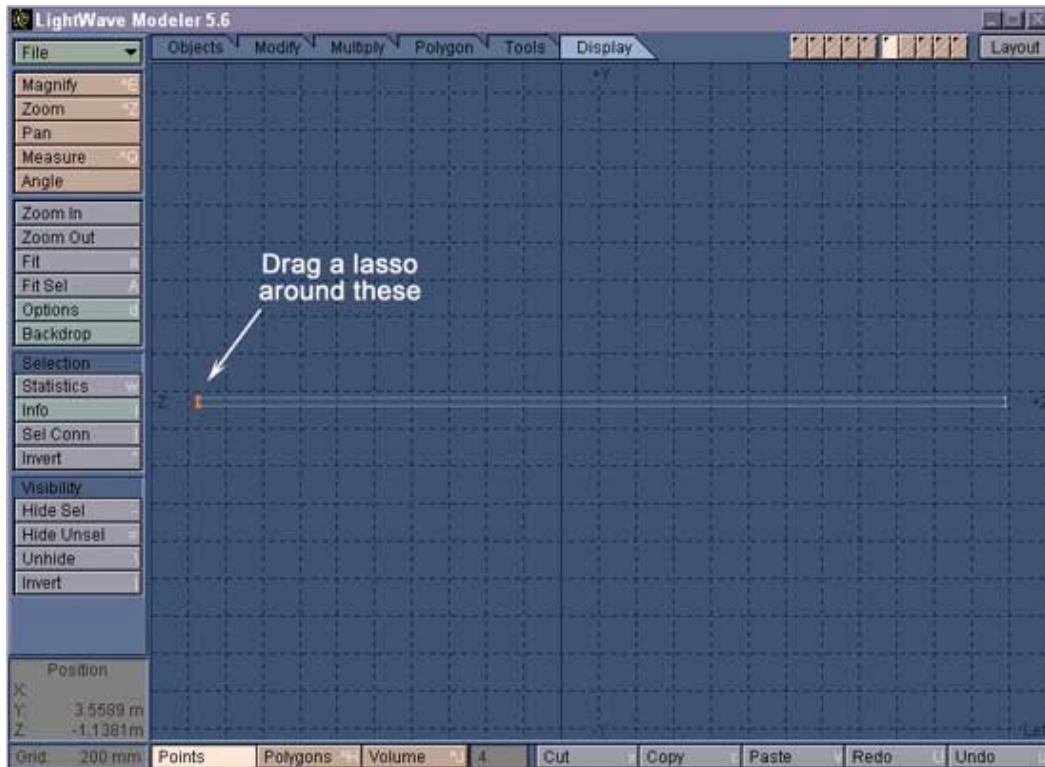
	LOW		HIGH		Segments
X	2,49m	X	2,59m	X	1
Y	3,8m	Y	3,85m	Y	1
Z	-4,5m	Z	2,5m	Z	1

Click OK and then hit Enter to create the box. Activate the Mirror Tool and bring up the Numeric Panel, set the Axis to X and the Position to 0, then click OK and hit Enter. Switch to Layer 6 and once again activate the Box Tool and bring up its Numeric Panel, then use the following settings.

	LOW		HIGH		Segments
X	850mm	X	950mm	X	1
Y	3,72m	Y	3,77m	Y	1
Z	-1,95m	Z	2,38m	Z	1

Click OK and hit Enter to create this Box.

Size up the Side View and hit "a" to fit this last created box. Drag a lasso around the four left points like in Picture 52.



Picture 52: Drag a lasso around these four points

Activate the Move Tool and bring up the Numeric Panel, then use the following settings.

X	0
Y	-2,72m
Z	0

Activate the Mirror Tool and set the Axis to X, the Position to 0 and click OK, then hit Enter to perform the Mirror Operation. Switch to Layer 4 and put Layer 5 and 6 in the background, and then perform a Boolean Union Operation. Merge Points when finished. Delete the objects in Layer 5 and 6 since these are now joined together in Layer 4. With Layer 4 active, bring up the Numeric Panel for the Bevel Tool and bevel these Railings three times with the following settings.

	Inset	Shift
1	10mm	5mm
2	10mm	0mm
3	5mm	-2mm

We are now finished with all the basic Objects for this Mansion Hall. Switch to Layer 2 and save these Rail Holders as "Level1_RailHolders.lwo". Switch to Layer 4 and bring up the Surface Panel, select the Walls_Wood surface and click Apply, then save this object as "Level1_Railing.lwo".